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**1) Title of the Submission:** Career Integration with Science, Health and Life Skills at the Grade 6 Level

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Career Integration with Science, Health and Life Skills at the Grade 6 Level

Abstract

This paper presents and discusses the effectiveness of integrating a career planning unit with both Grade 6 Science and Health and Life Skills curricula. The data presented is both quantitative and qualitative in nature. Within this career planning unit, a variety of learning activities will be outlined and discussed as to the benefits of integrating career planning into the Alberta Education Curriculum for Science and Health and Life Skills. Clear descriptions of each activity are outlined and resources and templates used for evaluation of the unit are provided. This career planning unit was delivered to a grade 6 class in a small hamlet in Southern Alberta, consisting of 18 students from mostly

rural/farming households. 99% of the students who participated in the unit indicated that the activities were either *Good* or *Great*. Objectives of the unit were met with 53% of the students reporting that the unit plan helped them to learn a lot about themselves, 35% stating that this unit plan helped them to learn a lot about careers, 82% noting that this unit plan made them excited about what they could do with their life and 47% reporting that this unit plan made them want to learn more about different careers. Discussion regarding this integrated career planning unit at the grade 6 level will clarify how the unit was demonstrably successful, even though some of the data may look contrary to that end. Suggestions as to ways in which the unit could be altered to improve student feedback will also be discussed. Students were able to demonstrate increased self-awareness regarding their unique interests and passions, as well as how this self-knowledge applied to making decisions regarding their future lives. Further, longitudinal data following the career paths of students with whom this sort of career integration has been made, would prove useful in analyzing the long-term benefits and outcomes of career planning initiatives of this kind.

Becoming an Apple Distinguished School  
(1:1 Laptop/iPad Roll-out)

Educational Technology

Panel Session

Panelists will share the journey Second Baptist School embarked upon when it began a 1:1 laptop program in grades 5-12 and a 1:1 iPad program in grades 3-4. Topics addressed include visionary leadership, innovative learning and teaching, relevant and timely professional development, compelling evidence of success and flexible learning environments. Learn what it takes to become an Apple Distinguished School, an honor Second Baptist School received in 2013.

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Parents perceptions of the quality and availability of early intervention services for young children with autism spectrum disorder in Saudi Arabia

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## **Introduction**

An increasing number of autism cases are reported. Autism has become the second most common childhood developmental disability, with a lower prevalence rate than intellectual disability, but a higher rate than all other disabilities. A recent report study conducted by the Center for Disease Control and Prevention (CDC) reported that the prevalence of children with Autism Spectrum Disorder has risen to 1 in every 88 births, and nearly 1 per 54 boys in the United States (CDC, 2012a; Autism Society of America, 2012; Autism Speak, 2013a). This increasing prevalence draws attention to the necessity of taking action.

### *Prevalence of Children with ASD in Saudi Arabia*

According to the 2011 Census in Saudi Arabia, the total population is nearly 28,376,355 people that live in Saudi Arabia (Central Department of Statistic and information, 2011). Even though half of the population is under 15 years old, services and supports for children with developmental and psychiatric needs are not well established (Qureshi, Habib, al-Ghamdi, Majzoub, & Fender, 2001). Although there is no statistic that shows the correct number of individuals with ASD in Saudi Arabia, as a researcher we have to accommodate children with ASD and their family's needs in order to help them collaborate effectively and have positive attitude toward early intervention and other related services.

For this reason, Understanding parents' perspectives leads to increased parental satisfaction and involvement. Increased satisfaction and involvement is considered key to the development of greater outcomes for both children with ASD and their families. Consequently, this study is needed to help the voices of parents of children with ASD be heard in order to meet the needs of children with ASD and their families, as well as help to develop and improve early intervention services in order to provide better services for children with ASD in Saudi Arabia.

### **Purpose of the pilot Study**

This study has three purposes. The first purpose is to investigate parents' perceptions of the quality and availability of early intervention services in Saudi Arabia for children diagnosed with autism (infancy to eight years). The second purpose is to discover how parents' perceptions of quality and availability vary according to parent and child characteristics. The third purpose is to find out how early intervention services for children with autism in Saudi Arabia can be improved based upon parents' perceptions of needs.

### **Statement of the Problem**

The growing number of children who are diagnosed with ASD has significantly increased at an alarming rate internationally as well in Saudi Arabia. The prevalence of children with ASD reported in 2007 was six out of 1000 children in Saudi Arabia. Also, the prevalence of autism is four times higher in males compared to females (American Bedu, 2009). There is no recent statistic that shows the correct number of individuals with ASD in Saudi Arabia. As a result of

the researcher's estimation in this study, the prevalence of children with autism in Saudi Arabia is 322,459 among the total population. Even with this significant prevalence, there are still limitations in early intervention services provided for children with ASD and their families. There is no data that shows the quality and availability of early intervention services provided for young children from infancy to eight years old in Saudi Arabia.

### **Significance of the study**

Parents of children with ASD are struggling to find appropriate and sufficient early intervention services that meet their children's unique needs because of the increasing number of children who are diagnosed with ASD and the recent awareness of the spectrum in Saudi Arabia. The lack of studies that investigate the quality and availability of early intervention services creates a significant need for information for parents and professionals in the field of autism and early intervention. This information is needed to improve early intervention services in Saudi Arabia. Parents play an important role in their children's education and development, and it is critical to develop and improve services, which leads to increased parental satisfaction and gradually enhanced parental involvement. This study is essential due to the lack of studies that examine parents' perceptions and needs of the early intervention services in the kingdom of Saudi Arabia. The key findings of this study will help the parents' voices of children with ASD be heard in order to develop and improve early intervention services, as well as help policy makers and professionals better understand parents' needs in order to provide better services for parents in Saudi Arabia.

### **Research Questions**

1. What are parents' perceptions and need of the quality and availability of early intervention services (infancy to eight years) in Saudi Arabia for children diagnosed with autism?
2. How do parents' perceptions and needs of quality and availability vary by parent and child characteristics?
3. How can early intervention services for children with autism in Saudi Arabia be improved based upon parents' perceptions of needs?

## **METHODOLOGY**

### **Participants**

- ☉ A descriptive study using a quantitative design (Survey) was chosen as the best way to gather information regarding parents' perceptions (Creswell, 2012).
- ☉ The 20 parents' participants for this study were drawn from many centers in three cities: Jeddah, Makkah, and Riyadh.
- ☉ **Children:**
- ☉ 53% female- 47% male.
- ☉ 65% were less than 5 years old- 15% were 6 years or more.
- ☉ 70% were diagnosed at the age of 2 to 3 years.

- Ⓢ 85% received diagnosis in Riyadh.
- Ⓢ 65% attending Autism centers, 5% public KG, 5% public hospital, 20% centers for children with special needs.
- Ⓢ 55% attend special education settings, 40% did not attend in a school.

## **Results**

The primary objective of this study is to investigate the parent's perceptions and needs of the quality and availability of the early intervention services in Saudi Arabia for children diagnosed with autism. Parent's perceptions and needs were measured by the Parent Perceptions Questionnaire (PPQ) and Parent Need Questionnaire (PNQ) respectively. The PPQ utilized five subscales to determine parent's perceptions: Early intervention services, Services on response, specialized curriculum focusing on Autism, family training and involvement and degree of engagement. The PNQ utilized five subscales as well to determine parent's needs: Need of information, Need of training, Need of support, financial assistance and Need of quality services. The data from the survey were analyzed and interpreted regarding parent perceptions and needs of the quality and availability of early intervention services for their children with ASD. The demographic information related to participants of the study and results from data analyses are reported and discussed by responding to each research questions. Bar charts with percentages were reported related to demographics of participants. Means and standard deviations were calculated to assess the levels of parent perceptions and needs of quality and availability of early intervention services for their children with ASD. Multivariate analysis of variance (MANOVA) were used to determine differences among parent perceptions and needs in total and subscale scores across demographics of the participants.

### **Research Question 1**

What are the parents' perceptions and need of the quality and availability of early intervention services (0-8 years) in Saudi Arabia for children diagnosed with autism?

Parents' perceptions and need of the quality and availability of early intervention services were measured using PPQ and PNQ respectively.

	Total score of Parents' perceptions	Early intervention services	Services on responses	Specialized curriculum in ASD	Family training	Degree of engagement
Mean	2.4115	2.4395	2.2685	2.6667	2.2237	2.3202

	Total score of Parents' needs	Need of information	Financial assistance	Need of support	Need of training	Need of Quality services
Mean	1.5946	1.5684	1.5789	1.7939	1.4895	1.5702

- ⊙ Highest rate on Specialized curriculum focusing on Autism (**mean= 2.67 and SD=0.486**) meaning that the specialized curriculum focusing on autism that their child received is not appropriate.
- ⊙ The result of the parent's need of quality and availability is quite unexpected as most of the parents found these needs "unnecessary" or "don't need" on an average whereas most of them disagree or found the quality and availability of early intervention services normal.

## Research Question 2

How do parent's perceptions and need of quality and availability vary by parent and child characteristics?

*An analysis of Total Parent's Perceptions and Needs on Parent and Children*

*Characteristics:*

- ☉ **Gender:** mothers perceptions & needs higher than fathers. (n=20) 15 mothers-5 fathers, the results indicated that there are significant differences between mothers and fathers in their perceptions and needs. The female parents expressed higher needs of early intervention services than male parents. This finding can be explained as that according to Saudi Arabia culture the mothers are responsible in taking care of children while male parents responsibilities is to provide (money, food, clothes...etc.). Accordingly, raising a child with ASD alone led mothers to seek out more supports for their children and themselves.
- ☉ **Monthly income** (1 RS=\$0.27) parents whose income less than 7000RS were more satisfied with current early intervention services than parents whose income 10.000RS or more and considered as wealthy families. That can simply be explained as wealthy families were able to access to information in English language as the fact that higher income means higher education levels, and those parents compare what they read or know about different early intervention services around the world and the actual services in Saudi Arabia. Which led them to set higher expectation and insist to receive higher quality early intervention services and supports?
- ☉ **Age:** majority age between (31-40) were significantly less agreed about early intervention services, and the researcher can interpret that parents who are (31-40) were able to access information about early intervention and autism and they displayed higher expectations on the current services. While parents age 30 years or less reported high level of needs, and it can simply be explain as they might be new parents with a new experience with children, and as having a child with ASD their experience become harder and seek out for needs.
- ☉ **Educational level:** (bachelor and higher less satisfied with early intervention services than those held high school or less. This finding should be interpreted as following: according to Saudi's culture parents who are less educated have strongly believe on professionals' suggestions and recommendations (professionals always right). The finding also can be interpret as that the Saudi Arabia still in early stage in the field of autism and early intervention, and might many research and information available in English language. Accordingly, high level education is able to access this information and set higher expectation for early intervention services in Saudi Arabia. While there is no significant differences in the parents' needs.

- ② **Number of children:** Parents who have one child showed significant lower involvement in EI. This can be explained as lack of experience for those consider as new parents with new experiences.
- ② **Age at diagnosis and start early intervention:** Parents whose children diagnosed after age 3 reported higher mean scores in both their perceptions than children diagnosed younger. That can be explained as and.
- ② **City of Intervention:** Parents from Jeddah reported higher need of training and need of information that can be explained as there are less early intervention services in Jeddah when comparing with Riyadh where there are many centers that provide early intervention services and supports for children with ASD and their families. The three cities; Jeddah, Riyadh, and Makkah reported significant needs of parents training and high quality early intervention services.
- ② **Type of class attended:** the parents whose children with ASD attended inclusive classroom setting reported higher satisfaction level than parents whose children attended self-contain or not attended school at al. the reason maybe the children who attended self-contain classroom or not attended school at all might have severe autism and need more supports and cares than others.

## Conclusion

Findings from this study provided important recommendations about early intervention services and supports provided for children with ASD and their families:

1. The needs to increase society awareness about autism, and ASD treatments as well as early intervention services and supports that available for children with ASD.
2. The importance of early diagnosis that resulting finding early intervention services as early as possible.
3. The needs of intensity early intervention services in order to get positive outcomes and improve the quality of children with ASD life and their families.
4. The important to understand the needs of parents in order to help them have positive perceptions toward early intervention as a resulting in higher parents' involvement.
5. It is important to have greater collaboration and communication between early intervention services, schools, and department of Special Education under the ministry of education in order to maximize children with ASD benefits.
6. The need of ongoing training and professional development is essential in order to improve the early intervention services for children with ASD in Saudi Arabia.
7. The needs of establish special programs for parents' training as an important stone in successful early intervention program which are parents.
- 8.

**TITLE PAGE**

**Title:**

Effects of intelligence and personality in the academic achievement of university students

**Topic area:**

Higher education

**Synopsis:** The present study investigates the extent to which intelligence and personality can account for academic achievement in a high ability population.

**Presentation format:**

Poster session

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## **Effects of Intelligence and Personality in the Academic Achievement of University students**

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**Introduction:** It has been proposed that general educational performance is a multiplicative function of ability and motivation and that these two domains can be conceptualized as intelligence and personality (Rinderman & Neubauer, 2001). By now there is a large body of evidence supporting intelligence and personality as important predictors of educational achievement (Chamorro-Premuzic & Furnham, 2003). Overall, general intelligence is the best psychological predictor of educational success (Jensen, 1998). However, it has been suggested that individual variation in general intelligence might be less important in high-ability populations (Jensen, 1980). This poster presents preliminary results from an ongoing study on predicting academic achievement in university students.

**Objective:** To determine the extent to which intelligence and personality can account for academic achievement in a high ability population.

**Methods:** Participants were 40 university students, mainly female psychology students. Intelligence was measured with the Bochumer Matrizen-test (BOMAT), personality was measured by way of the NEO-PI R personality test and the participants' bachelor grades were used as a measure of academic achievement. The data was analyzed by way of Linear Regression Analysis with bachelor grade as dependent variable and intelligence and personality dimensions as independent variables.

**Results:** The results were statistically non-significant (due to the small sample size). Intelligence showed the strongest correlation (.26) followed by Conscientiousness (.21) and Openness (.17). Intelligence accounted for 6.6 % of the variation in academic performance whereas the five personality dimensions accounted for an additional 7.7 % for a total of 14.3 % explained variance. Closer inspection of the Conscientiousness and Openness dimensions revealed that not all facets were equally important. Especially the O-facet Ideas which measures intellectual curiosity and openness to new ideas and the C-facets Self-discipline and Achievement Striving seemed important for academic achievement.

**Discussion:** The present study indicates that both general intelligence and personality play a role in academic achievement and that curious, open-minded, self-disciplined, ambitious and intelligent university students are more likely to achieve academic success. In future research and praxis it would seem promising to focus not only on ability, but also on specific motivational factors such as curiosity, self-discipline and ambition. Obviously other factors than intelligence and personality must be considered, as the predictive value of these variables were after all modest.

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## Constructing Narratives as a Context for Algebra

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### **Abstract:**

Using narratives in mathematics helps students situate mathematics within a context. This paper presents a framework for the integration of narratives into an algebra course designed for preservice teachers. The preservice teachers designed and created narratives using technology (digital cameras and PowerPoint) to support algebraic investigations at the elementary school level based on the *Common Core Standards*. A seamless unification of language arts and mathematics content is possible with these narratives. The framework can be extended beyond the university classroom by guiding children in creating their own algebraic narratives.

Preservice teachers often struggle with the content of preparatory classes that involve advanced mathematical teaching and learning (Ticknor, 2012; Bates, Latham, and Kim, 2011; Nathan and Petrosino, 2003). In addition, they question the relevance of algebraic thinking introduced at the elementary school level (McGowen and Davis, 2001). In order to help the students understand the importance of introducing advanced concepts to younger learners, an assignment was developed in a university preparatory class that required preservice teachers to create algebraic narratives using the Common Core Standards (CCSSI, 2012).

For the assignment, students were first introduced to the idea of employing story narratives as a means of conveying richer characters, settings, and plot development than those typically encountered in the traditional mathematical curriculum. Because the course was in mathematics rather than developing technology skills, the PowerPoint format was chosen as the story transmission vehicle due to its simplicity and adaptability for students with varying degrees of technical versatility.

Inherent to the idea of narrative creation is that the fictional world is explicated for the reader in order that it becomes a real and possible world for the mind to imagine and engage in. Potentially the narrative holds the promise of altering the imaginer's (or in the present case, the learner's) cognitive understanding and perspective (Ryan, 1991). Making certain all the elements of a persuasive, informational and detailed story are in place is necessary for this to occur. The responsibility for having all the information in place and in proper sequence will be the student storyteller/narrator's job. More demanding than this, however, will be role that follows this of the reading decoder, or interpreter, in making connections, and searching for inferences, or clues, to reveal the meanings (here, mathematical symbols, formulae, or patterns) that will be needed both for text comprehension and mathematical problem solving (Graesser, Singer, and Trabasso, 1994). To design a successful algebraic story narrative will require learners to assume all roles—transacting nuance, mathematical accuracy, and meaning—as they check and edit for understanding (Rosenblatt, 1969).

To situate a fictional story with algebraic ideas at its center for a mathematical investigation requires a writer understanding of both storytelling and mathematics. While the story may be a means for demonstrating knowledge of algebraic thinking and organization, its success is predicated upon the preservice teacher's ability to express his knowing in word selection, sequence and calibration of mathematics-to-story, visual aids, and examples to make the concepts to be conveyed clear, fruitful and enjoyable.

Stonewater (2002), studied two groups of college calculus students whom he required to write expository accounts describing their personal understanding of selected calculus principles he had taught. He then analyzed common elements shared by successful writers as opposed to those employed by unsuccessful writers. Drawing on the prior work of Cross and Steadman's

“classroom-based research” (1996), Stonewater hypothesized that better comprehension outcomes were achieved through improving the unique means by which each student learned—a sort of internalized map of subject understanding. Mathematical explication through writing, Stonewater found, was one means of gauging this progress. From his inquiries and findings he suggested the following checklist, or criterion system, be utilized to assess student writing outcomes reflecting higher comprehension and achievement: 1) students will use more specific mathematical language and terminology; 2) students will build a clear and comprehensible context to situate their knowledge; 3) students will provide clear and relevant examples within the text; 4) student essays will include more than one mode of modeling knowledge (algebraic, graphical, numeric); 5) students will display accurate examples of mathematical notation; and 6) students will produce a comprehensible piece of writing, or essay, that addresses its topic.

The authors believe Stonewater’s criteria for assessing mathematical comprehension through classroom writing retain their generalizability as applied to the present work despite departures in class content (calculus) and literary genre (expository). For purposes of preservice elementary teaching and learning, the Stonewater elements provide a pathway, or general rubric, for both teacher and student to gauge writing efficacy.

### The Narratives

Elementary preservice teachers were enrolled in an upper division mathematics content course for future elementary teachers entitled *Investigating Change: Patterns, Functions and Modeling*. The course focused on algebraic content with an emphasis on understanding the meaning of functions, equations and graphs.

Preservice teachers wrote two narratives: one for students in grades 3-5 and another for students in grades 6-8. The narratives had to tell a story, like children’s literature, and present

ideas that required algebraic problem solving to solve. Generally, a solution requires clues presented in the narrative. (See Kurz and Bartholomew (2012) for a framework guiding the integration of preservice teacher created stories into university methodology courses.) The requirements for the narrative include: 1) title page, 2) Core Content Standards, 3) six or more pages of story, 4) an algebraic dilemma (without a solution) and 5) original art or photographs (no clip art or Internet photographs).

### Difficulties

Preservice teachers often struggle with both the language arts and mathematics aspects of the activity. In language arts, they struggle with the framework of a story. For example, they are unaware of how to develop characters. They may name a character and present him/her without developing any kind of meaning or relevance to the narrative. The narrative may read like bullet points, never adequately drawing in the reader.

Of course, preservice teachers also struggle with basic writing conventions-including sentence structure and spelling, which will require explanation or a separate tutorial addressing grammatical correctness. Finally, they struggle with plot. They do not always know how to write a creative story with a plot. Instead, the narrative may read like slides with mathematical word problems written on them. Inviting a cooperating English faculty to present a brief lecture prior to beginning the writing task is an excellent way to address both grammatical and plot issues. Visiting faculty could be asked to bring handouts, including basic plot structure graphic organizers to accompany the talk.

In terms of writing about mathematics, preservice teachers sometimes do not know how to provide structure without providing too many hints or an answer (or nearly an answer). They try to help the students so much that the student does not have to think to solve the problem. For

example, one preservice teacher used patterning in her story. She listed the pattern for the students in the form of an input/output chart, leaving only the last two values for the learners to fill in. Additionally, students often exhibit difficulty with the required mathematics. Some cannot solve their own dilemma. Finally, they may have trouble developing their own stories. It is not uncommon to find a student who has copied a word problem from another source, like a textbook, and modified it into narrative form. Designating one or two advanced students to work with others during class time as “editors-at-large” can help struggling writers advance in their confidence and know-how without the embarrassment of requiring constant teacher intervention.

### Conclusion

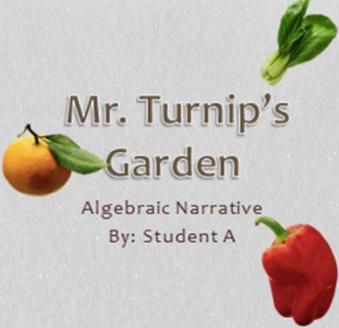
When preservice teachers explore mathematics, it is important for them to experience mathematics within a context. The narrative framework presented here can be extended to support elementary students’ growth in algebra and other areas of mathematics, as well. Children can create their own narratives within a specific mathematical topic or content area allowing for them to internalize mathematics and create relevance to their own daily lives (Kurz & Bartholomew, 2013).

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## Appendix (Sample)

 <p><b>Mr. Turnip's Garden</b> Algebraic Narrative By: Student A</p> 	<h3>Standard</h3> <p>4.OA.5: Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.</p>
 <p>During spring, Mr. Turnip loves to garden. The sunshine is gentle, warm, and perfect for growing the ideal garden. Mr. Turnip grew up on a farm in Wisconsin. So when he moved to Arizona, his happiness relied on the success of his garden!</p>	<p>• Mr. Turnip waited all year long to grow his succulent, ripe, red, juicy tomatoes. He anticipated the moment he could grow his own green heads of lettuce. But most of all, he constantly craved his vibrant, orange carrots.</p> 
 <p>• Mr. Turnip is a little obsessive when it comes to planting his garden. He must separate each plant by exactly 6 square inches to give each vegetable its own space to grow. The dimensions of the garden are 10 vegetable rows (left to right) by 5 vegetable columns (up and down).</p>	<p>• Mr. Turnip read in his favorite magazine <i>Better Homes and Gardens</i>, that a very particular arrangement will grow the most delicious vegetable garden.</p> 



- Mr. Turnip plants in the order of one tomato, 2 heads of lettuce, 2 bunches of carrots from left to right (a total of 10 vegetables per row). He begins the same routine for each of the rows of vegetables.



- If Mr. Turnip follows *Better Homes and Gardens* rules on planting vegetables, what is the core of the pattern for his vegetable planting? How many times will the core repeat on each row?

## Mr. Turnip's Perfect Planting Plan

*Drawing a t-chart or picture may help solve these problems*

- What is the 7<sup>th</sup> vegetable in Mr. Turnip's garden? Explain how you found your answer.
- If Mr. Turnip decides to move his garden into a much bigger space but with the same 10 vegetable per row amount, what will the 99<sup>th</sup> vegetable be (if the garden was observed from top left corner to bottom right corner)?
- Do you recognize any other patterns in the columns of Mr. Turnip's garden?  
(Hint: What vegetable will numbers 2, 12, 22, 32, 42, etc. be? )
- If Mr. Turnip decides to extend his rows to 12 vegetables per row and did not start the pattern over for each row, how would it affect the above patterns? Would the 99<sup>th</sup> term change?

**Title:** Practice Safe Grading - Use a Rubric

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**Abstract**

Rubrics have been described as an assessment tool that saves time grading, conveys objective feedback, and promotes student learning. In this session, we will look at how rubrics can accomplish these three worthwhile objectives, as well as explore their limitations, and engage in the process of rubric development.

Within kinesiology, there are several opportunities that lend themselves to the use of rubrics. Not only can they be effective for written, oral, and group assignments, but during practical and clinically-based assessments, rubrics can be used by multiple instructors, preceptors and peers with similar outcome measurements. Additionally, students can use rubrics as a self-evaluation tool.

The session time will be divided into five main areas:

- Definition of what a rubric is and description of its main elements.
- Types of rubrics, including the advantages and disadvantages of each.
- The outcome of rubric scoring and benefits to instructors, preceptors, and students.

- Proper preparation of an assignment to be graded via a rubric.
- Assistance in creation and editing of rubrics.

The first four areas will be presented through PPT presentation and discussion. The fifth area will include an opportunity to create individual rubrics and interactively critique other examples.

The outcome goal is to offer educators with an objective grading alternative that allows students to have a better indication of strengths and limitations of their assignments, projects, practical exams, or clinical experiences.

1. The audience will be able to generate a grading tool that will convey objective feedback to the student.
2. The audience will properly apply the grading rubric to enhance student learning.
3. The audience will discern the difference between an effective and ineffective rubric model.

The session will begin with a PPT presentation describing the why, what, and how of scoring rubrics. During the presentation, open discussion will be encouraged. Examples of blank rubrics will be provided to the audience. Small groups will be formed and asked to create their own rubrics for each of the following: group, written, and oral presentations, and practical evaluations. Once the rubric is created, the groups will trade and critique the rubric.

The presentation's emphasis will be on the interactive portion and creation of rubrics.

## **Hawaii International Conference on Education**

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**Running head: THE LEAP MODEL: PERCEPTIONS OF LEGITIMACY**

**The LEAP Model: Perceptions of Emergency Service Leaders of Legitimacy**

Topic area: **Higher Education**

Presentation format: **Paper Session**

This paper explores Emergency Services leader perceptions of legitimacy in the eyes of the followers. A new leadership model, the LEAP model is introduced and compared with traditional definitions of legitimacy and position power. Skills, attributes, and education/training are shown to be more important than appointed authority for administering in the emergency services. The need to develop leadership curriculum to fit the legitimacy attributes is identified.

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## PERCEPTIONS OF LEGITIMACY

### ABSTRACT

This study adds to the qualitative data showing how leaders in the emergency services perceive legitimacy and the bases of power. The study examines the perception of leaders and their perspective on why subordinates view their leader as legitimate and/or authentic. Two definitions of legitimacy are presented: the traditional viewpoint of French and Raven (1959) associating legitimate power “with having status or formal job authority” and the other proposed by Maxfield (2012) in the LEAP leadership model basing legitimacy or authenticity more on the characteristics and skills leaders bring to their positions. Emergency service students interviewed leaders in their career fields, determining their view of legitimacy. They found that few emergency services leaders perceived legitimacy as traditionally defined, but rather they saw it as the experience, education and training, the skills and traits they bring to the position. Subordinate trust was important to their definition of legitimacy and this was on leader experience and integrity. The results of this study posit that leadership education should include developing the legitimacy and authenticity of leaders beyond the traditional aspects of position and/or rank.

# PERCEPTIONS OF LEGITIMACY

## INTRODUCTION

Over the last few decades, leadership training and leadership education have permeated business, politics, academia, and our national lexicon. Yet, it appears that as a nation we have little or no confidence in our leadership. Barbara Kellerman (2012), in her book, *The End of Leadership* contends that, "...while the leadership industry has been thriving growing and prospering beyond anyone's early imaginings—leaders by and large are performing poorly, worse in many ways than before, miserably disappointing in any case to those among us who once believed the experts held the keys to the kingdom (p. xv)." Her premise is that because of technology such as the Internet, cell phones, social networking, etc., followers are finding ways to make traditional leaders, using traditional methods, less effective. In some ways we agree with this phenomenon. However, we also see something more serious and alarming with regard to contemporary leadership.

Over the last 20 years or so, we have observed society becoming obsessed with instant gratification and glamour. Consequently, leaders and in a general sense, parents, have gravitated toward seeking popularity and/or fame as opposed to providing character and substantive leadership. Leaders have used hollow platitudes of hope and change to gain favor with followers, but have not been able to deliver leaving their followers disenchanted, if not jaded.

French and Raven's (1959) research on the bases of social power is the most widely quoted writing on the source of leader power. Their research provides a framework of dyadic relationships connecting the person with the power and the persons influenced by the power. French and Raven identified five types of power as legitimate, reward, coercive, referent, and expert. Northouse (2013, pp. 10-11) further divided the types of power into position and personal power. Position power is the power a person acquires from being holder of a position,

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rank or office within an organization. Because of position, these leaders can exercise any or all of legitimate, reward or coercive authority as the bases of their power. French and Raven defined legitimate as being “associated with having status or formal job authority.” Reward power comes from the leader’s ability to provide rewards to subordinates. Coercive power is “the capacity to penalize or punish others.” Personal power, on the other hand, is the authority followers attribute to leaders. It is gained based on referent or expert power. Referent power comes from the followers’ liking or identification for the leader. Followers attribute expert power to the leader when they perceive a leader as being competent and knowledgeable as a leader or in the business enterprise.

The question is, “Why are our leaders so ineffective?” Barbara Kellerman may be right in her assertion that technology has changed the role and function of leaders. However, we feel there may be a much simpler explanation. If our premise is correct, it will take much effort from scholars, those in positions of authority, and most importantly, parents to educate and implement a shift in thinking.

Leadership is holistic, not prescriptive. This may be where people have gone wrong in their thinking. As Barbara Kellerman asserts in her book, the leadership-training/education trend is somewhat nascent and based on the belief that anyone can become a leader if they take a few classes and apply a few principles. But as she points out, this does not seem to be necessarily true. Max Van Manen (1990), an educator/scholar argues that the prescribed method for human science, in contrast to natural science involves description, interpretations, and self-reflective or critical analysis. In other words, we explain nature, but we must understand human life.

Scholarly work on leadership, in a relative sense, is lacking. We feel that the Newtonian approach to the study of leadership has been one of the reasons. What we mean by this is

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scientists have used the approach that if leadership can be broken down to its most basic unit or atomized, it can then be rebuilt in a step-by-step method, thereby creating a prescription for building great leaders. Yet, because we are dealing with the dynamics of being human, leadership is a *subjective*, not an objective experience. Therefore, we subscribe more to an Einsteinian approach. The Einsteinian view *infers* a reality based on the analysis of the relationship between the observed and the observer. It is easy to study, survey, quantify, and statistically analyze formative and summative results of various leadership strategies to find what works. However, it does not tell us how it works; or how one leader is able to get results that another leader does not, while using the same strategies. Applying strategies or theories is only part of the leadership equation.

### **Leadership Theories**

There are dozens, if not hundreds of definitions for leadership. All of them are probably right in one form or another because leadership is so hard to pin down to a specific concept. So, for the purposes of this paper we will offer a working definition of what we believe to be one of the better leadership characterizations. Leadership is: *A process and state where an individual influences a group and the group agrees to the influence of the individual in order to reach a desired ideal or vision.*

With that thought in mind, it would be beneficial to briefly introduce (or re-introduce) some of the more prevalent theories on leadership. This is by no means an exhaustive list, as there are too many. We are just presenting the more common and well-known theories for a better understanding of some of the research and work developed around leadership. We will not explore these theories in depth, but they will be important to understand as we look at our *LEAP* leadership model.

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### Nature versus Nurture—The Great Man Theory

Are great leaders born, natural leaders or were they developed or nurtured to become great leaders? This debate has been going on for a long time and there is probably some legitimacy in both positions. Maybe a better way to describe these differing views is to look at them as *trait, attribute, or characteristic leadership* versus *skill-based leadership*.

Trait, attribute, or characteristic leadership ascribes that a leader is born with certain characteristics, attributes and/or traits that endow them with leadership abilities. Some of these traits may be things like intelligence, extroversion, verbal proficiency, physical factors (such as height), and so on. This particular concept has been studied for years. Researchers have worked to discover those traits that are common among many leaders. This is appealing to most of us because it fits with our experience and beliefs (or at least our hopes that a great leader has been born and will emerge when needed). One problem with this research approach is that while some traits and characteristics were identified it seems that the list continues to grow. This may be because in these studies leadership was not explored by context or situation.

Skills-based leadership ascribes that a leader develops those skills and abilities that make a good leader. Those skills and/or abilities can basically be broken down into three main areas: Technical skills, interpersonal skills, and conceptual/analytical skills. This also is appealing in that it gives hope to those who may not have, or believe they have the inborn traits of leadership. By learning and developing specific skills, a person may be able to enhance his or her leadership potential. One of the biggest weaknesses of this approach is that just having or developing these skills is not a good predictor of leadership success. Another weakness we find in this approach is that many of the skills can really be considered traits or characteristics, so it is hard to define what skills really enhance leadership ability (Northouse, 2010).

### Path-Goal Theory

The Path-Goal theory basically asserts the function of a leader is to motivate the follower by finding ways of increasing personal payoffs for the individual with his or her employment goal attainment and making the route to those payoffs easier by clarifying desired outcomes, eliminating barriers and increasing the opportunities for personal growth and satisfaction of the follower. One of the interesting aspects of the Path-Goal theory is that it identifies some different approaches to leadership, namely:

1. Directive Leadership—the leader gives the followers instructions about their task (e.g., what is expected, how it is to be done, and when it is to be done).
2. Supportive Leadership—the leader is friendly, approachable and taking care of the needs and wellbeing of followers.
3. Participative Leadership—the leader is one who invites the followers to share in the decision-making processes by consulting and incorporating the ideas, input, and opinions of followers.
4. Achievement-Oriented Leadership—the leader challenges followers to rise to their highest levels of personal and/or team achievement.

A major strength of the Path-Goal leadership theory is that it underscores the importance of leadership's relationship with subordinate performance by removing barriers to performance and giving clarity to goals and outcomes. However, the biggest weakness we see in this theory is that it seems to be a bit nebulous in identifying the relationship between motivation and leadership, or in other words, it seems to be more of a management tool than a leadership attribute and is a little too complex to be easily understood (Northouse, 2010).

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### Psychodynamic Approach

The Psychodynamic Approach is not really a theory of leadership, but rather a different way to approach leading. It is based on the assumption that everyone has a different personality type and responds differently to leadership based on their personality. Many of you may be familiar with or even have participated in surveys or questionnaires designed to determine your personality type. An example of this would be the Meyers-Briggs Type Indicator. This approach is based in some of Sigmund Freud's, Carl Jung's, and others' work in psychology. In fact, Carl Jung's work on personality types led to the classifications most prevalent today. They are: 1) extroversion vs. introversion; 2) sensing vs. intuiting; 3) thinking vs. feeling; and 4) judging vs. perceiving. From these four classifications there are 16 different combinations of personality dimensions.

The Psychodynamic Approach asserts that the leader needs to become more aware of subordinates' personality types as well as his or her own, and how the subordinates will respond in work and task relationships. This identifies the apparent strength of the Psychodynamic Approach—that the leader becomes more aware his or her own approach to leadership, of the individual subordinate needs and the relationship between tasks and success. Yet, as one can imagine, that is also identifies the greatest weakness. It appears to be a gargantuan task for the leader to learn, be aware of, and facilitate the needs of each subordinate. While this may be very effective among small work groups, it seems apparent that it would have major drawbacks in larger more complex organizations (Northouse, 2010).

### Servant Leadership

Robert Greenleaf, in the 1970s coined the phrase "servant leadership," which has since gained popularity and become a topic of study and research. Basically, Servant Leadership is just

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as it sounds, to lead by being a servant. Greenleaf argued that a person becomes a leader because it is his or her nature to serve. In other words, Greenleaf was asserting that a person first becomes a servant by being concerned about the needs and well-being of others, and then is bestowed leadership by those being served.

As one can imagine, this has become very popular. Who does not want to feel that he or she matters and that someone is looking out for him or her? The great strength of servant leadership is that focuses on people first; serve the needs of subordinates and they will perform at higher levels. The biggest weakness we see in this approach is that the leader may become so involved in serving they have no time or compulsion to create and strive toward a preferred future or vision of where the group or organization needs to move (Greenleaf Foundation, 1970).

### Contingency Leadership or Leader-Match

Contingency Theory, introduced by Fred Fiedler (1964) asserts that a leader's effectiveness is based upon the situation or context of the issue. In other words, contingency theory is that a leader is matched to a situation based upon the leader's personal style; hence the situation determines the type of leader needed. Fiedler developed the "least preferred co-worker" scale (LPC) to help determine a person's style or orientation to match their potential for leadership in a certain context. This scale is used widely today by many organizations with the hope of identifying the right leader for the right situation.

One of the strengths of this theory is the fact that there has been a lot of research and empirical support for it. One other strength is the fact that contingency theory asserts a leader does not have to be effective in all situations, which implies that a one-size-fits-all leader is not necessarily the best approach.

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The biggest weakness to contingency theory we see is that it does not explain what to do when a person in a leadership position is not the right fit for the situation. Because this theory is developed around personality, there seems to be little consideration for development and training of current leaders, nor does it explain well why some leaders whose styles do not match the situation or context are still successful.

### Transformational Leadership

Transformational Leadership's goal is to transform people and/or organizations into more vibrant, robust, and dynamic entities that are in congruence with core values and principles of excellence. To simplify, the transformational leader creates vision and provides the supportive network to allow followers to achieve the vision. This is usually accomplished by the leader using one or more of the following means to achieve success: 1) Inspiration, 2) Intellectual simulation, 3) Trust, and 4) Individualized attention.

One of the strongest features of transformational theory is that it is not just based on the attributes and/or needs of the leader, but also incorporates the needs and desires of the followers. So, leadership emerges as a result of the interaction of the leader and followers. One other strength similar to the one previously mentioned, is that transformational leadership has a strong emphasis on morality, values, ethics, and follower needs. This gives the theory an intuitive appeal.

One weakness of transformational leadership is that it is hard to measure this and may be because the four factors introduced above seem to be inter-related rather than independent. Another weakness we see is that the theory may depend too much on trait or personality characteristics, which leads one to question whether or not this can be taught or developed. Our last criticism on transformational leadership theory is that there may be a tendency for this theory

to develop a concept of a “hero” leader by focusing on the leader and not the holistic interaction of the leader, followers, organization, and environment (Northouse, 2010).

### **Management vs. Leadership**

Because leadership has been unconsciously married to business and/or military settings, we feel that a natural confusion has occurred between management and leadership. In our opinion, this confusion has been exacerbated through the process of scientific inquiry. While both of these skills are important to the function of administration, they are also the anathema of each other. Take a moment to think about the role and attributes of management and the role and attributes of leadership.

First of all, what is the main function of management? If one really breaks it down to the most basic level, management is the process of controlling and compressing (to the best of one’s ability) the events of one’s environment in order to ensure efficiency and desired outcomes. In other words, it focuses on the processes or means by which outcomes are reached. It seeks to eliminate chaos or to tone-down any disruptive noise which may affect the processes and ultimately the outcome (or so that is the implied reason). However, doesn’t that tend to make the focus on means and processes? Isn’t that why there are policies and strict procedures for job performance? In fact, aren’t we expected to be busy at all times so that our process and productivity can be measured? Aren’t we compensated for our efficiency and output?

Leadership, on the other hand is expansive and nurturing. Leaders foster exploration, experimentation, reflection, and surprisingly, a little chaos (Wheatley, 2006). Leaders try not to be bound by firm policies, rules and procedures because they may inhibit the ability to move toward the vision. Leadership’s main role is to keep the vision (end) as the focus and foster a sense of community in seeking the vision. The focus is on doing the right thing. As Peter

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Drucker said, “Managers do things right (**means**); leaders do the right thing (**ends**)” (parenthetical comments added). Sometimes means and ends can complement and other times they conflict. It is for this reason we think that legitimacy is more just having authority (French and Raven, 1959).

### **LEAP Model of Leadership**

Maxfield (2012) introduced a new leadership model, which redefines the bases of power and legitimacy. This model, designated by the acronym LEAP, provides a guide for developing and assessing leadership. Maxfield and Fisher (2012) propose it as an effective tool in professionalizing fire and emergency service leadership (or for that matter, any other discipline). The LEAP model is comprised of the four leader traits or characteristics they believe to be most important. A leader is: 1) Legitimate—a leader has legitimate power, knowledge, skill and ability developed through his or her work, experience, education, and attention to detail; 2) Ethical—a good leader has strong character, strong values, and makes ethical and value-based decisions when confronted with choices and/or dilemmas; 3) Affective—a good leader has the ability to instill, trust, confidence, emotion, passion, and create vision with others; and, 4) Persistent—a good leader does not give up when times are tough or there is resistance to a righteous idea or plan, but shows determination in achieving goals and objectives.

The LEAP model appears to fit when applied to the desired proficiencies/outcomes of the Professional Fire Officer Development Standard (National Fire Protection Association, 2012). The education, training, and experience components of the professional standard seek to demonstrate the individual’s legitimate expertise in the discipline by assessing the demonstrative outcomes of the taxonomies of learning, e.g., cognitive, affective and psychomotor domains (Bloom, Krathwhol, & Masia, 1964; Bloom, 1956).

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Benjamin Bloom, David Krathwohl and other colleagues (1964) studied the objectives of education. After many exploratory meetings with college and university examiners, they identified divisions within the objectives of education. They were:

1. *Cognitive*: Objectives that emphasize remembering, recalling or reproducing something that has been believed to be learned. Cognitive objectives also vary from simple recall of material to combining and synthesizing new ideas and/or material.

2. *Affective*: Objectives that emphasize a feeling, an emotion, or acceptance or rejection of material. They further identified these objectives as interests, attitudes, appreciations, values, and emotional sets or biases.

3. *Psychomotor*: Objectives that emphasize motor skills (muscular), manipulation of materials and objects, or some act that requires a neuromuscular coordination.

From our observations and study it appears that most educators have placed emphasis for training and educational methods on the cognitive and psychomotor domains. While these are important and effective, it is the affective domain that seems more intriguing and relevant to adult learning. In other words, once something has been put into one's awareness, has it been accepted enough to bring about change in one's viewpoint and/or behavior?

The self-development section of the proposed NFPA Professional Standard assesses the individual's growth and understanding of inter-personal skills, values, ethics, communication and efficacy in creating/ promoting vision, emotion, passion, etc. It can be posited that self-efficacy, or the belief that one has the knowledge and skills to produce creative solutions and outcomes seems to demonstrate or reflect intrinsic motivation to engage in ethical development and affective or creative activities such as vision building (Gong, Huang, & Fahr, 2009).

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Finally, implied as is the intended outcome of the professional development model, an individual demonstrates a certain amount of persistence in completing the process and portfolio requirements of the standard. No empirical evidence exists (yet) that this fire and emergency services standard's process completely develops an individual's leadership ability. However, considerable anecdotal evidence shows the correlation between education, training, experience and leadership success.

### METHODOLOGY

Twenty-eight senior emergency services students in a leadership capstone course were asked to interview public administrators. Most chose to interview administrators in their career field – fire (14), police (7), or emergency management (3). Other fields (4) included city government, health and university administration, and disaster agency management. Three interviewees were female, none from police or fire. One of the questions the leaders were asked was: “What personal characteristics or background do you have that your subordinates would say legitimize you as a leader?” Other questions were related to ethics, vision, and persistence. The students asked to have the responses supported by leadership experiences and specific examples or stories. Then they wrote the responses into a narrative as part of a paper about leadership. The interview was chosen because it is suitable for the novice as well as the sophisticated researcher (Turner, 2010).

The goal of this study was to determine how legitimacy was defined by leaders/administrators as interpreted by the students and whether they discovered new insights about leadership legitimacy. The construct of this study was based on the premise that legitimacy is a social dynamic, which means that it is not a *thing* but a *relation* within a group of people (see definition of leadership above).

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The interviews provide rich qualitative data resulting in better understanding of phenomena, as well as generating hypotheses or propositions related to the phenomena. Grounded theory methodology provides a process for analysis through developing categories of information, interconnecting them, and then developing theoretical propositions. This research methodology follows a process of analysis, described as the data analysis spiral (Creswell, 2013, p. 183). Interview data is organized and then read, while the researcher makes notes and memos in the margins. Subsequently, a process of describing, classifying and interpreting begins. This process puts the data in context, makes comparisons, and categorizes the information using codes. Codes are combined, reduced in number and, propositions are put forward connecting the phenomena with their contexts.

### FINDINGS

The study found that establishing legitimacy as perceived by the leaders interviewed is best accomplished through experience, education and training, skills, and traits. A consensus perception (based on the codes) appeared to affirm these were the most important characteristics.

#### **Experience**

Experience was the most frequent reason interviewees gave for subordinates viewing them as legitimate leaders. Experience was identified 23 times. Working “from the ground up” has provided them opportunities to serve in many positions and take on many responsibilities. “The main thing that legitimizes you as a leader is your current experiences with the guys you work with,” said one leader.

Four leaders identified longevity and/or seniority as important. One saw his career as “a path of consistent progression and promotion.” Another said, “I believe being in a position for months and/or years allows for a greater understanding of the position’s responsibilities and

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objectives.” Another added that through experience he has “been able to accrue heavy and complex responsibilities [leading to] an authoritative positional role in the process.” A fourth indicated that having done the job of those she now leads is important in legitimizing her as a leader.

Two leaders indicated that their experience made them competent leaders and two said their experience gave them understanding. One fire chief indicated that “the experiences he carries with him have helped give him a deep understanding and appreciation for the work of his firefighters.” Another leader said, “I have shown by my past experience that my judgment is sound.” Another added, “When people know that you have been around for a while, they look to you for answers.”

Experience and reflection has allowed them to learn from other leaders. One administrator said experience and reflections allowed him to see what he liked and did not like in other leaders and to observe the type of values others demonstrated that had importance to him. This reflective process made him more aware of some of his personal qualities, as well as his strengths and deficiencies. One fire chief indicated: “I learned from my old leader’s inadequacies. One lieutenant was not the leader of the crew. The engineer was the unofficial leader. It was a difficult process to learn.” He added appreciatively, “I had a captain who was a strong leader and helped me to develop my own leadership skills by counseling and heart-to-heart talks.”

### **Education and Training**

While experience teaches leadership skills, formal education and training also help to legitimize administrators in the emergency services as leaders. Eight interviewees identified education and training as important. Education is often defined as the formal studies taken at

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colleges or universities which help someone to think critically and problem solve. Training on the other hand, is more practical and often done in context.

One leader offered his view on the relationship between experience and education. “Even with my experience I am learning new methodologies and believe that education is the key in maintaining good leadership.” Another added, “I have proven skills and training that echoes through my leadership. I believe that is why others are drawn to my leadership.” Another said, “People look to well-educated people to know the answers to ... problems.”

### **Skills**

Skills are often distinguished from traits because they are learned rather than inherited (Northouse, 2013), however they may often overlap. Fourteen interviewees identified vital skills they thought important in legitimizing them as leaders. The following skills were identified by the interviewed leaders/administrators: *communication and listening (8), problem solving and decision making (5), and technical expertise (1)*.

Communication and problem solving were identified as skills the leaders use on a daily basis. Good listening skills are critical, according to one leader. “By listening to team members who have different levels of experience and expertise, [a leader] can learn and [get] more understanding and [build] relationships,” he said. The result is greater success in accomplishing the overall goals and objectives of the unit. Another said, “Legitimate leaders are understanding and willing to listen.... Having the ability to listen is critical and not taking offense when someone has different ideas.” A fire chief emphasized the importance of listening in decision making. “I rarely make a decision without the input of a least a few other members of the department at the combat level,” he said.

### **Traits and characteristics**

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Numerous traits and characteristics were identified as legitimizing leaders. Perhaps most important was honesty and integrity (identified by 14 leaders). Personal integrity combined with experience develops follower trust. “Doing the right thing is important,” said one leader.

“Choosing the difficult right over the easy wrong goes right back to your character,” said another leader.

Trust is crucial in the emergency services when a person’s life or death may depend on the decisions of leaders. “You can’t follow someone you don’t trust,” said one leader. Another said he let his personal characteristics guide his actions and he gained the trust of his subordinates. “The guys totally trust me in all aspects of the decisions we make,” said another leader.

One leader focused on the importance of example in building trust. “I do what I say I will do. I live the mission, vision and values of our company. Employees know me. I am visible.” Another said, “I think my deputies know that what I say and what I do is the same thing. I’m never going to ask them to do something I haven’t done before or aren’t willing to do myself.” Another added, “Following the rules, whether you agree with them or not is important to your reputation. You follow the rules because that’s the job.”

Another critical trait identified is the willingness to learn from subordinates and be flexible in decision making. One leader, reflecting back on his first appointment as a leader in the police force said, “Gradually I saw that my ideas were not the only ones and were not always the best ones.” Another said, “Humble leaders tend to be more successful in connecting with their employees.”

Leadership philosophy seemed important as well. Caring about, helping, and mentoring subordinates was identified by three interviewees. Fairness was identified as an important trait

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and other leaders also felt it was important to lead by example. “Maturity plays a huge role in my leadership style as well as my employees. Mature employees, who know what needs to be done just do it. Newer employees need guidance and direction,” said one leader. “You can’t lead from behind and push your employees; you have to lead from the front and encourage them to follow,” another added. “My greatest success is helping others to succeed themselves,” said another.

Five interviewees indicated goal setting and vision were important in legitimizing them as leaders and similarly others felt that task orientation and working hard were also important. “To bring others together to work together, to achieve a common goal, and the ability to establish that common goal” are important characteristics that one interviewee identified as legitimizing him as a leader.

A student interviewer summed up the personal characteristics of the leader he interviewed. “He never really did anything different to make himself stand out from his peers other than working hard, being honest, and always acting mature and showing respect.” Only one interviewee identified his appointment (job authority) was important in legitimizing him as a leader.

The following chart summarizes the characteristics interviewees felt subordinates viewed as important in legitimizing them as leaders.

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**Chart 1. Characteristics that legitimize leaders**

<p>Experience, 23</p> <p>Education and Training, 8</p> <p>Skills, 14</p> <p style="padding-left: 20px;">Communication and listening, 8</p> <p style="padding-left: 20px;">Problem solving and decision making, 5</p> <p style="padding-left: 20px;">Technical expertise, 1</p> <p>Traits, 33</p> <p style="padding-left: 20px;">Honesty and integrity, 14</p> <p style="padding-left: 20px;">Trust, 3</p> <p style="padding-left: 20px;">Learn from subordinates, 2</p>	<p>Traits (continued)</p> <p style="padding-left: 20px;">Flexible, 1</p> <p style="padding-left: 20px;">Caring, 3</p> <p style="padding-left: 20px;">Fairness, 1</p> <p style="padding-left: 20px;">Lead by example, 3</p> <p style="padding-left: 20px;">Goal setting, 5</p> <p style="padding-left: 20px;">Hard work, 2</p> <p style="padding-left: 20px;">Values, 1</p> <p style="padding-left: 20px;">Involved, 1</p> <p style="padding-left: 20px;">Love for department, 1</p> <p style="padding-left: 20px;">Creative, 1</p> <p>Appointment, 1</p>
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### DISCUSSION

Only one leader indicated his legitimate power was based on the traditional definition “associated with having status or formal job authority” (French and Raven, 1959). All leaders saw their legitimacy more in terms of experience, education and training, skills and traits. This fits better Maxfield’s (2012) definition of legitimacy which is “developed through the leader’s work, experience, education, and attention to detail.” It also corresponds better with personal power (Northouse, 2013), which is the authority that followers attribute to leaders, based on referent or expert power. Subordinates identify with the leader based on the perception that he or

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she is competent and knowledgeable. This study is limited in its scope because of its methodology and the size and nature of participants. The interview approach provides qualitative rather than empirical data. Twenty-eight leaders limited to the emergency services field were interviewed and answers were based on one open-ended question: “What personal characteristics or background do you have that your subordinates would say legitimize you as a leader?”

### CONCLUSIONS

The findings of this study suggest two conclusions (or propositions).

- More emphasis is placed by emergency services leaders on experience and working relationships than on formal appointment and job position.
- Trust is more important in the emergency services than a command and control structure. Personal integrity combined with experience lead to trust.

This study appears to affirm the value of the LEAP model as applied to the emergency services and may have application in any leadership context. Leaders can confirm their legitimacy through work experience, education and training, the development of skills and leadership traits. The paper seems to assert that curriculum for leadership development should be developed to introduce and reinforce the development of skills and attributes of legitimacy. By developing courses for reality-based, experiential (ontological) educational experience, students will be able to apply the principles of legitimacy that exceed positions power (French and Raven, 1959).

While this study did not examine the Ethical, Affective, and Persistent aspects of the LEAP model, these characteristics appear to build leadership legitimacy as well as trust. While some of the identified components of legitimacy were traits, most were characteristics and/or skills,

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which could be developed or refined through attention, reflective practice, and experimentation.

We believe that legitimacy in the eyes of the followers is much more than appointed authority, but rather developed characteristics of the leader/administrator, hence the difference between manager and leader, and as such, should be taught in higher education courses.

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# **School-Family interventions conducted by elementary teachers to prevent school drop out in the near future**

by

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## **Abstract**

Scientific literature notices that dropping out from school or more commonly known as ‘stall school’, is a long process that is detected as soon as elementary school, as well it notices that the family issue is a risk factor well associated with stall school. However, to prevent this, collaboration of school-family (SF) would be a privileged means to prevent ‘stall school’. However, the responsibility would mostly rely on the teachers to organize SF collaboration interventions. Since the enforcement of the SF collaboration is very little mentioned in scientific writings, this research wished to palliate the lack of knowledge, this is the reason why two research objectives have been set as a target: 1) list SF interventions that consider family factors, conducted by teachers of elementary school; 2) describe the interventions’ enforcement conditions. The qualitative method has therefore been used to describe and understand this phenomenon that has been very little explored in scientific writings. To do this, 10 elementary teachers (that have been teaching for at least 2 years) from the Saguenay-Lac-St-Jean and the Laurentian regions’ in Quebec, Canada, have been recruited. Firstly, the teachers answered a questionnaire on ‘stall school’ and on the SF collaboration interventions. Next, a ‘semi-directed’ interview was conducted, the interview guide was stemming from a conceptual frame and from the questionnaire analysis that was answered previously. Then, the general inductive analysis of the qualitative data directed by the researcher, allowed to clear the SF collaboration interventions, as well as the conditions to be pursued and to be established for them to be applied. Afterwards, the interview permitted to note that despite the fact that the teachers were able to identify the students that were at risk of dropping out of school in the near future, (keeping in mind that these teachers fully understand that they do have a role to play in the prevention of ‘stall school’), in general, these teachers do rarely make collaboration interventions in SF in connection with the family factors associated to SF. Actually, only 2 of the 14 family

factors see frequent or occasional interventions, i.e. more than once per year, while the other 12 are rarely the subject of interventions, namely once or twice per year. Some recommendations arise from the results of the interpretation: 1) training and research propositions on SF collaboration, the prevention of 'stall school' and the mentor role with regards to SF collaboration so that a paradigm change may occur, where the professional culture could recognize the parents' role and as well would facilitate their participation; 2) the proposition to include the community with an extracurricular approach that would combine itself to the school approach already in existence so that the SF collaboration and the prevention of dropping out of school could be optimized. It is therefore ultimately desirable to obtain a paradigm shift so that the professional school culture can influence the teachers' self-sufficient feeling, as well as their comprehension of the role they have to play in the SF collaboration in link with the prevention of school drop out.

1. Title: Understanding and Assessing Young Readers Comprehension Strategies with a Stimulated Recall Method
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## Abstract :

Strategies students use to understand what they read are difficult to identify since reading is generally a quiet activity. To develop a better knowledge of strategies used by different profiles of readers, many methods are based on reported strategies (survey, open-ended interviews, etc.), which does not describe the context or the reasons readers use the strategies they report. This study aims to develop a better knowledge of diverse young readers in asking them to explain how they proceed to understand two different written texts. By using a stimulated recall method, 20 students aged 10-12 years old revealed their reading strategies while watching themselves reading and answering comprehension questions. To preserve the natural context of reading and prevent cognitive overload, they described their own actions and reflections while seeing themselves on a video recording.

The results show that students could be classified in 3 different profiles according to the variety and complexity of the reading strategies they describe. Students in the first profile have a very limited knowledge of strategies. They do not control their comprehension strategies enough to be able to evaluate and readjust their actions. Students in the second profile are less at-risk because they use certain types of efficient reading strategies. However, their repertoire is limited and their ability to question their action varies in different reading contexts. The third profile describes effective readers who use a combination of pertinent strategies to understand different kind of texts. These results will be discussed and illustrated by students' reading performance and comments of their strategies. The contribution of such a method will also be presented along with limits and implications for practitioners.

# **POSSIBILITY OF APPLYING THE ELECTRONIC MANAGEMENT AT SANA'A UNIVERSITY**

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## **Abstract**

This research aims to identify the importance of applying of Electronic Management at Sana'a University, And trying to know the obstacles that facing the application, As well as the most prominent mechanisms that can overcome the obstacles to applying of Electronic Management at the University of Sana'a, In addition to knowing the impact of the research variables: (type, qualification, actual occupation, years of experience, training courses of computers.

To achieve the objectives of this research, the analytical and descriptive method is employed, and research sample consists of (161) Administrative Officer at Sana'a University, and search tool consists of two parts, including the first section of public information, and includes Section II questionnaire questions. Researcher has been using appropriate statistical techniques including arithmetic means, and the standard deviation and variance analysis and Shefee test.

The results of the research show that the individuals of research sample think it is importance to apply the electronic management at Sana'a University, there are obstacles to apply the electronic management at Sana'a University; in addition to that the research sample confirms the need for the existence of mechanisms to overcome obstacles of applying electronic management and There are statistically differences concerning all areas of the questionnaire attributing to the scientific qualification in benefit of those who got the master degree.

Moreover, the study recommends that the necessity of providing the internet for all departments that follow the general administration at Sana'a University, and the necessity of encourage the employees in the field of management and qualifying them for the transformation towards the electronic management through destination systems for rewards.

**Keywords:** Possibility, Electronic Management, University

## **Introduction:**

The human enters twenty-first Century, and becomes depending on information and communication technology which is one of important pillar for modern management.

And the communications and information revolution becomes have an impact on the management of change crucially and it becomes now available employ available information In order to achieve the objectives of the institution. This revolution carries the most important changes it is the technological and communications revolution, and the tendency to the formation of large economic entities.

In light of this scientific progress and the emergence of the so-called digital or electronic, It is necessary for the countries of the world that is moving towards the utilization of this technology in all fields including administrative areas. This technique is introducing a digital technique in electronic commerce as well as in the field of electronic management and government administration. So the countries seeking to apply the electronic management of all its dealings, to get rid of traditional management, among these countries, the Republic of Yemen, which seeks to apply the electronic management in a number of government and private institutions.

And the life activities begins, converting from traditional activities to electronic activities to benefit from the advantages of these new activities that it is called electronic management in order to reduce the cost of government actions, through the provision of these processes and procedures electronically, thereby increasing the efficiency of the administrative work whether through its dealings with individuals or organizations, the ease of dealing with these techniques in light of the evolution of its software, and these days it is considered progress standard for any country is the ability this country to follow the information revolution and understanding the reality of inevitability (Nermeen AL- Saadi,2004,p.70).

So many countries have begun to focus clearly on the introduction of Management Information Technology in their institutions, and the announcement of the application of electronic management according to the drawn plans.

Among these countries the Republic of Yemen, In particular, the Ministry of Higher Education in Yemen has begun in the interest Electronic Management, because the qualification of human resources in any other educational or non-educational is the basic foundation for any development, so this research is trying to sheds light on an attempt possibility of applying the Electronic Management at Sana'a University.

### **Statement of the problem:**

We can formulate the research problem in the following main question:

### **What is possibility of applying electronic management at Sana'a University?**

This main question branches into the following sub questions:

- 1- What is importance degree Applying Electronic management at Sana'a University?
- 2- What is Obstacles that Facing Application Electronic management at Sana'a University?
- 3- What is the main Mechanisms Which Can Overcome to applying Electronic management Obstacles at Sana'a University?
- 4- Are there statistically differences between the individuals of the research sample regarding the possibility of applying the electronic management that attribute to the following demographic changes: (Scientific qualification, actual occupation, years of experiences, and courses of computers).

### **Research objectives:**

The objectives of the research are as follows:

- 1- To identify the extent of importance of applying the Electronic management at Sana'a University.
- 2- To know the obstacle that hind the application of Electronic management at Sana'a. University.
- 3- To know the most Mechanisms that can overcome to applying Electronic Management Obstacles at Sana'a University.
- 4- To determine statistically differences between the individuals of the research sample regarding the possibility of applying the electronic management that

attribute to the following demographic changes: (Scientific qualification, actual occupation, years of experiences, courses of computers).

**Limitations of the research:** this research is limited to:

- General managers, directors of administrative and heads of departments in Public Administration at Sana'a University , because they are on top of the administrative work and more university staff interested in developing work and more impact on the decision-makers. And Field study has been applied in the academic year 2011 – 2012.

**Significance of the research:**

This research is derived in the vitality of its subject and its importance, which addresses the theme of electronic management at Sana'a University.

The importance of this research is in dealing with electronic management as it one of important topics that can be developed the administrative performance of universities.

**Terminology of the Research:**

The definitions will display of the search term, and the adopted definition by the researcher for this term as follows:

**Electronic Management:**

Electronic Management is defined as integrated electronic Organization depends on information and communication technologies to convert administrative work to manual work by implementing the techniques of modern digital(Tariq Amer,2007,p.28).

And Saad Yasien defines Electronic Management as Business system and activities that are performed electronically across networks and it is a function of doing works by using systems and electronic means(Saad Yasien,2005,p.22).

The definition of Electronic Management As the term indicates, E-Management, like E-business refers to the electronic management using technology to improve and facilitate the governing process besides maintaining electronic records for the best performance and results of the work flow integration of information.

Francis Ohanyido first coined this term as a part of the new evolving concepts around e-Governance. E-Management is about accomplishing the governmental goals and objectives through getting people linked together. This kind of management is no difference from the concept of Management as it includes planning, organizing, staffing leading and finally directing and controlling by supervision. E-management's goal as well does not differ from the management objective, which is accomplishing the overall organizational objectives, specifically, through applying ICT and managerial concepts that are stated previously. [http://wiki.answers.com/Q/What is the definition of Electronic Management](http://wiki.answers.com/Q/What_is_the_definition_of_Electronic_Management).

And (Noun) eManagement refers to electronic management . It was coined by Francis Ohanyido as part of the new evolving concepts around eGovernance. It is about the process of getting people together to accomplish desired goals. E-Management comprises planning, organizing, staffing, leading or directing, and controlling an organization (a group of one or more people or entities) or effort for the purpose of accomplishing a goal through the deployment of ICT and manipulation of human resources, financial resources, and natural resources. <http://www.definition-of.com/eManagemen>

Through previous definitions it can be said that Electronic Management Is a quick and easy way to simplify the administrative procedures and implemented efficiently and submitted in less time and effort.

**Researcher** defines electronic management procedurally through this search as the use of information and communication technologies electronically in guiding the policies and procedures the work of the university in order to achieve its objectives and provide the necessary flexibility to respond to changes internally and externally.

### **Previous studies:**

The researcher has organized the previous studies according to the newer:

#### **- S.Vijayarani and Radjamanogary(2013):**

Employees are treated as assets in the organization. In a competitive business environment, one of the key elements of an organization success is their employees' intellectual capability to improve the organizational performance by way of reducing cost, new product development, generate new ideas related to product, process and other areas of management. The employees are find novel ideas and proposed these ideas to management through suggestion system.

Suggestion system is technique which is motivating the employees to participate in decision making process and improve the organization performance. The primary data was collected through structure questionnaire based on convenience sampling method. This research paper focus on employee creativity and its impact on suggestion system and the aims of this article are to find an answer for two questions: 1. what are the factors motivating employee creativity? and 2. What is the impact of creativity on employee suggestion system? Finally this article conclude that both organizational factors and individual factors influencing creativity and there is a positive relationship between employee creativity and suggestion system.

- **Helaiel Almutairi (2011):**

**Aim.** The purpose of the study is to understand the impact of personal and professional factors on Kuwaiti public managers' information behavior.

**Method.** Data were gathered using a questionnaire sent to a total of 400 staff in eighteen ministries. A response rate of 80% was obtained. Data were collected on six person-related variables: age, sex, education, management level, job experience and information system use, and three information behavior dimensions: information characteristics, information types, and information sources.

**Analysis.** The statistical analysis package, SPSS, was used to carry multivariate analysis of variance, analysis of variance, and multiple comparisons with the Scheffe test.

**Results.** The study's findings indicated that age, education, and information system use are the only contextual variables that make a difference in the three information dimensions. The three independent variables were further subjected to a more detailed analysis to understand which of the subgroups' means differ significantly from the others and what direction the differences (positive/negative) take.

**Conclusion.** The general finding is that there are subgroup differences in terms of the impact on information behaviour of age, educational level and information system use.

- **Erwin J. Rooze(2010):**

ICT is used to support and automate case management practices of courts. This use of ICT is here referred to as electronic case management systems. These systems can be applied at different levels of sophistication, on different types of caseflows and with different components. This article introduces the term "differentiated electronic case management systems", since the development and

deployment of these electronic systems differs widely in level of sophistication and provided functionality and since these systems are capable of supporting the contingent use of differentiated case management. An overview of functionality of electronic case management systems found in research is given, using a distinction in four components. The lens of the contingency theory is used to discuss what relevance the different types of case flows, components and levels of sophistication have for the differentiated use and development of electronic case management systems. Also discussed is what courts can do to harvest potential benefits of electronic case management systems.

- **Hamoud Al-ameeri (2008):**

This study aims to identify at provided requirements (administrative, technical, and physical, financial, and human) that encourages the use of e-management at University, and the researcher uses the descriptive method, the study sample consists of all the deans, vice deans and heads of departments of colleges at Umm Al-Qura University in Makkah and they are (190) Individuals, and used a questionnaire consisting of (46) Phrase, The study finds several of the most important results: The degree of availability of laws and regulations for applying the Electronic Management, the degree of availability of ports, communication lines to the Internet and- the degree of availability of financial incentive to push workers to Convert towards the use of e-management at University are few.

- **Abdullah AL- tamam (2007):**

This study aims to identify the reality the application of electronic management in technical colleges in Saudi Arabia from the standpoint of the educational and training faculty and the extent to which the application of electronic management to improve the management level of technical colleges, and a questionnaire is designed by the researcher and the study uses the descriptive analytical survey method and is used stratified random sample consists of members of the training teaching staff at technical colleges. . One of the main findings of the study as follows: Technical colleges apply electronic management moderately; the application of electronic management contributes to improving the level of management of technical colleges and That there are differences between the reality of the application of electronic management and the level of their contribution in improving management of technical colleges.

**Fousia Bakhsh(2007):**

This study aims to identify how to apply the electronic management in develop of colleges of education for girls in Saudi Arabia, in the light of contemporary transformations, the questionnaire has been used as a tool to gather information and the study sample consists of (205) dean ,vice dean, and heads of departments at colleges of Education in the Kingdom. And the analytical method has been used at this study. The most important results of this study following are: the most prominent application of the requirements of the electronic management in: prepare a strategic plan, investment techniques of human and material and reinforcement the organizational climate in college to work as a team.

**- Mehmet Acikalin and Erdinc Duru(2005):**

Nowadays, the use of technology in education has become more popular. Special attention has been given to the adaptation of computer technology into teaching-learning process for effective learning and increasing students' achievement. In recent years, it has been realized that there is an immense benefit in applying computer technology in the social studies classroom.

The first purpose of this study is to review computer - and Internet-supported instructional strategies in the social studies classroom. The second purpose of the study is to investigate the degree of application of these strategies in the social studies classroom. Thus, based on the literature review, the results of the research regarding computer technology in the social studies classroom are summarized, and educational implications are discussed.

In addition, some suggestions for further research were offered.

**- Thomas Groenewald (2004):**

This case study serves as exemplar regarding what can go wrong with the implementation of an electronic document management system. Knowledge agility and knowledge as capital, is outlined against the backdrop of the information society and knowledge economy. The importance of electronic document management and control is sketched thereafter. The literature review is concluded with the impact of human resource management on knowledge agility, which includes references to the learning organization and complexity theory. The intervention methodology, comprising three phases, follows next. The results of the three phases are presented thereafter. Partial success has been achieved with improving the human efficacy of electronic document management; however the client opted to discontinue the system in use.

The researcher has acquired the following benefits from the previous studies:

- 1- Structural of the theoretical study.
- 2- Identifying the items of the study.
- 3- Finding the suit method for descriptive analysis.

**Methods of the research:** The research depends on the descriptive analytical methods.

**Research society:**

It consists of all employees at the University of Sana'a (1545) Employees, according to Statistical Yearbook issued by the Department of Statistics at the University of Sana'a. (Statistical Yearbook 2010, p 263).

**Research Sample:**

Due to the large size of the research community, the researcher chooses a stratified random sample of (224) employees of general managers, departmental managers, and department heads in Public Administration at Sana'a University , who are on the job, rate (14.49%) of the original community.

**Research tool:**

The researcher has used a closed questionnaire as a research tool and that after reviewing the educational literature, and previous studies related to the subject matter, and then drafting the questionnaire which include the basic components and dimensions and consists of (53) terms according to the following way: (5) I fully agree, (4) I agree, (3) I agree to a certain extent, (2) I do not agree (1) I do not agree at all. As the questionnaire were classified into three Interlocutors: the degree of importance of the application of electronic management (15 sentences).Obstacles facing the implementation of electronic management (20 sentences).The main mechanisms by which to overcome the constraints of the applying electronic management (16 sentences).

### **Tool Validity:**

To make sure of the validity of the tool, the researcher uses content validity by Specialize in the field of educational administration and psychology to judge the validity and sincerity of the questionnaire items In the light of amendments instrument specialists the tool appears in the final image So it includes (53) paragraphs under three fields.

### **Tool reliability:**

The researcher uses in the calculation of the stability of the tool Cronbach alpha reliability coefficient for internal consistency, table (1) shows the reliability coefficients for the tool and areas of research.

Table (1)

Reliability coefficients for the search tool and fields

No.	Field	Number of paragraphs	Cronbach's alpha
1	Importance	15	0.89.4
2	Constraints	20	0.89
3	Mechanisms	16	0.90
Total score		51	0.95

Shown in Table (1) that the stability of the areas of the questionnaire ranged between (0.89-0.90) while the overall stability (0.95) so the tool becomes suitable for the purposes of scientific research.

### **Application search tool:**

the search tool has been applied to the research sample totaling (224) employees of public administration at the University of Sana'a .The table(2) shows Distribution of questionnaires to a sample search and the number and rate of return and the unlikely ones, and table (3) shows the distribution of the research sample by variables and percentages after application.

Table (2)

Distribution of questionnaires to a sample search

Statement	Research sample	Questionnaires returned		excluded Questionnaires		Completed questionnaires	
		Repetition	%	Repetition	%	Repetition	%
Public administration workers at Sana'a University	224						
		32	14.28	31	13.89	161	71.87

Table (3)

Distribution of sample by variables and the percentage

Variable	Category	Repetition	Percent %
Type	Males	124	77
	Females	37	23
	Total	161	100
Qualification	High School	36	22.4
	Diploma	18	11.2
	Bachelor	78	48.4
	Master	29	18.0
	Total	161	100.0
Current Work	Heads of Departments	20	12.4
	Heads of administrative	41	25.5
	General managers	100	62.1
	Total	161	100.0
Years of Experience	Less than 5 years	51	31.7
	From 5 to 10 years	92	57.1
	More than 10 years	18	11.1
	Total	161	100.0
computer training courses	There is no training course	40	24.8
	One training course	4	2.5
	Two	58	36.0
	Three or more	59	36.6
	Total	161	100.0

### **Research results:**

- The individuals of research sample think it is importance to apply the electronic management at Sana'a University.
- The individuals of research sample think that there are obstacles to apply the electronic management at Sana'a University; in addition to that the research sample confirms the need for the existence of mechanisms to overcome obstacles of applying electronic management.
- There are no statistically differences concerning all areas of the questionnaire attributing to the gender.
- There are statistically differences concerning all areas of the questionnaire attributing to the scientific qualification in benefit of those who got the master degree.
- There are statistically differences concerning the obstacles of applying the electronic management attributing to the actual occupation in benefit of general manager.
- There are no statistically differences concerning all areas of the questionnaire attributing to years of experience.
- There are statistically differences concerning all areas and the total score of the questionnaire attributing to the courses of computer in benefit of those who have not computer courses.

### **Research recommendations:**

- The necessity of providing the internet for all departments that follow the general administration at Sana'a University.
- The good planning to prepare the qualified employees and holding the required training courses and workshops to apply the electronic management.
- The necessity of encourage the employees in the field of management and qualifying them for the transformation towards the electronic management through destination systems for rewards.
- All obstacles should remove for applying of the electronic management at the University of Sana'a.
- Prepare a special guide to the concept of the electronic management and its goals, and its importance in the fields of University work in order to contribute to the dissemination of wide culture for electronic management, and helping to remove the fears of the ambiguity of the concept of electronic management.

**Research suggestions:**

- Studies on the challenges and obstacles that may face the application of e-governance in various other educational levels.
- Depth Studies on the impact of the system of material and moral incentive for Sana'a University staff in particular and the public sector employees in general.

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<http://www.definition-of.com/eManagemen>

## **Proposal for Hawaii Conference 2014**

### **TechTeach, an American intensive clinical experience in teacher education: Perspectives from Vietnamese educators**

#### **1. Statement of the Problem**

Clinical experience in Vietnamese colleges of education is having a lot of criticism from the educators. The purpose of this paper is to investigate the Vietnamese educators' opinions about the feasibility of TechTeach program, an intensive clinical experience that is being applied at Texas Tech College of education to improve the quality of teacher education preparation program in Vietnam.

#### **2. Theoretical framework**

In a research about the clinical experience in a college of education in the South of Vietnam, Nguyen (2008) pointed out some of its shortcomings. Firstly, the time that students learned the knowledge about pedagogy was so far from the clinical practice, teacher candidates tended to forget the theory to apply into practice. Secondly, the objectives of clinical experience were not clear hence there were contrasting ideas whether the current length of the clinical experience was enough. Thirdly, the rubric assessment in the clinical experience did not get positive responses from both teachers and candidates.

Huynh (2012) stated the two outstanding difficulties that candidates encountered were the pedagogical knowledge and communication with students and teachers at school. Tran (2012) added classroom management, especially with unobedient students as the most concern from candidates. According to Do Van Dung, Vice President of College of Technical Education, the challenging resulted from the unrespecting of many colleges of education in Vietnam. He suggested making more research about this field to find out what is good to improve the current situation. Most interestingly, Ms. Truong Thi Viet Lien, deputy head of early childhood education in Ho Chi Minh said the alarming number of teacher quitted this job since they all encountered "reality shock", (Tuoitre Online Newspaper, 2013), which is also found in Weinstein research (1989). Weinstein noted that teacher candidates create a vision of an idealized career for themselves as teachers and frequently possess a sense of unrealistic optimism. Ms. Truong suggested increasing the time of clinical experience and having a career orientation so that candidates understand their career better.

The TechTeach program included a full year of clinical experience with the same mentor teacher and students. Candidates and mentor teachers received training on the TAP (The System for Teacher and Student Advancement) rubric and on co-teaching. This assessment rubric got much support from Eckert et al (2009) and National Institute for Excellence in Teaching (2012) as a way to improve teaching effectiveness and to grow ongoing profession. Candidates were observed by a university supervisor six times during the two semesters. They were given

equipment to video capture their lessons. The videos were uploaded to a web site, enabling the lessons to be reviewed by the candidate and others. The placements for the year-long student teaching experience were selected by a planning committee consisting of representatives from the school district and the university.

TechTeach program was piloted in Texas Tech college of Education in 2011 and is now fully applied in all levels. This program got positive feedback from teacher candidates, mentor teachers and site coordinators. This paper will ask for opinions from Vietnamese educators to see how this program can be adopted or adapted in Vietnam.

### **3. Background of the study**

Currently, clinical experience in the colleges of education in Vietnam follows the same guidelines from Ministry of Education and Training (MoET). Candidates will spend 6 weeks at school and will teach around 15 periods.

Candidates' performance is assessed by a school mentor teacher. The mentor uses the same framework for the rubric but the details in the rubric will vary from colleges to colleges. Site coordinator (professor at college make no assessment toward candidates' clinical experience result. Both candidates' teaching and classroom management skills are evaluated by mentor teacher.

TechTeach model provides one year opportunity for candidates to apply what they have learned. Their performance is video captured and assessed by TAP rubric. The researcher will make some recommendations from the feedback of Vietnamese educators.

### **4. Methods and Data Sources**

The information about TechTeach Program was provided to Vietnamese educators. Five professors and two administrators at college of education participated in the interview. The data collected from these data sources were analyzed using qualitative methods. The analysis provided the researcher perspectives from the Vietnamese educators about the implications of TechTeach program.

### **5. Results**

Three themes emerged from the data sources. Firstly, the Vietnamese educators talked about the advantages and disadvantages of one year clinical experience in Vietnam. Secondly, they shared their opinions about TAP rubric as a good reference to evaluate candidates' performance in Vietnam. Thirdly, they showed their concerns in the expense of technology use in the clinical experience.

## 6. Significance of the study

The result suggests that learning the intensive clinical experience from an advanced country is necessary. However, much adaptation must be made to apply it successfully in the Vietnam context. This study provides initial attempts to adapt a clinical practice model to improve the current quality of teacher education preparation program in Vietnam.

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***Endless Horizons: A Native Hawaiian Education Initiative***

**Presentation Abstract**

**Title:** *Endless Horizons: A Native Hawaiian Education Initiative*

*Endless Horizons* is an innovative after school program that provides culturally relevant academic interventions in reading and mathematics through a *blended learning model*, which integrates academic and cultural lessons. The overall program enhances students' academic and social performance by combining *Pearson Learning / Success Maker 5 Software Technologies*, with Native Hawaiian language, history, and traditional cultural values.

The thrust of this presentation is to share the most current information that supports youths' understanding and retention of native culture and values along with boosting their Literacy and Math skills. As such, the presentation addresses the program's academic and cultural program components, students' progress in reading and mathematics, professional development for teachers and cultural specialists, and parental involvement.

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***Endless Horizons: A Native Hawaiian Education Initiative***

**Introduction**

*Endless Horizons*, is a three year project funded by the US Department of Education / Native Hawaiian Education program. The project, which is housed at Tutor Hawaii in Honolulu, Hawaii, is under the leadership of Robert Allen, Project Director and David Laeha, Project Co-Project Director. The overall goal of the *Endless Horizons* initiative is to improve academic outcomes for all students, including high percentages of Native Hawaiian youth, who attend some of Hawaii's lowest performing elementary schools across the state.

The project addresses students' academic performance in Reading and Mathematics, and incorporates Native Hawaiian cultural values through activities implemented during A+ after school program sessions. A+ personnel participate in professional development designed to enhance their sensitivity to students' unique needs related to culture and poverty. They acknowledge that poverty is broader than economics and encompasses youths' cognitive, social, emotional, physical, and spiritual requirements. Youth participants engage in culturally relevant academic interventions through a *blended learning model* that links evidenced-based learning in Reading and Mathematics with Native Hawaiian language, cultural traditions, and local history.

*Endless Horizons* provides high quality educational opportunities to students who may be overlooked currently in public school settings due to budget restrictions, high poverty levels, and/or lack of family support for education. Moreover, existing after school programs do not include evidence-based academic interventions. Thus, it is difficult to demonstrate success in academic and enrichment programming.

**Student Demographics and Related Issues**

Program participants are at high risk of academic failure, juvenile delinquency, dropping out of school, unemployment, and reliance on public assistance as adults. Students live in high poverty areas, face economic barriers to accessing academic interventions that impact learning in a positive manner, and often live in families that may not support education. *Endless Horizons* allows youth to participate in A+ after school programs where teachers and cultural specialists share responsibility for students' academic, social, and cultural development.

The targeted school communities consist primarily of Native Hawaiians who have low education levels and high unemployment rates. Program participants' eligibility for free or reduced priced school meals typically is 10% - 20% higher than the overall student population across the state.

A closer look reveals that program participants are primarily of Native Hawaiian ancestry, and live in communities and attend Hawaii Department of Education schools ranked lowest according to poverty and achievement levels, as follows:

<b>Elementary School</b>	<b>Location</b>	<b>Hawaii DOE Rank</b>	<b>% Native Hawaiians</b>
Makaha	Waianae, HI	171 / 180	84.7%
Hilo Union	Hilo, HI	172 / 180	81.9%
Honowai	Waipahu, HI	175 / 180	86.6%

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Waipahu	Waipahi	176 / 180	81.7%
Keonepoko	Pahoa, HI	179 / 180	97.6%

A related concern is the potential detachment between community elders who grew up in completely different worlds than today's youth. This separation increases communication barriers between generations, and creates a climate alien to a community once steeped in tradition, veneration, and oral history. The Native Hawaiian language and traditional culture values are disappearing in an increasingly modern world.

Finally, after school youth development programs provide safe and supervised environments that focus on homework assistance. Staff training is restricted to health and safety issues. There is little professional development that ties Native Hawaiian language and cultural traditions to classroom learning. Cultural programming is rare, and yet, crucial for youths' academic success because it increases their performance on academic assessments in reading and mathematics.

**Program Highlights**

**Academic Development:**

Students participate two hours weekly in Tutor Hawaii's *blended learning* evidence-based academic intervention model, which focuses on reading and mathematics. The instructional program relies on *Pearson's Success Maker 5 Software Technologies*. Pearson Learning Reading and Mathematics activities include students' participation in differentiated, personalized web-based instruction tailored to their individual learning needs. Initial instructional experiences begin with assessments designed to identify starting points that complement students' current knowledge levels and skills in the subject area. Instruction then progresses to subsequent levels based on youths' performance progress and ever-changing learning needs.

Students receive incentives to move forward to subsequent skills. They spend a minimum of one hour in individualized computer-based assessment and instruction and participating in face-to-face follow-up instruction, and at least 15 minutes per session addressing Native Hawaiian *cultural values and activities*

**Overall Program Success / Students' Progress - Reading and Mathematics**

**Reading Performance Measure - Mean = 450 Students**

Level Data				Usage			Instructional Performance			Mastery		
Assigned Course Level	Current Course Level	IP Level	Gain	Time Spent	Total Sessions	Exercises Correct	Exercises Attempted	Exercises % Correct	Skills Assessed	Skills Measured	Skills % Mastered	% Students w/ AP
2.56	2.39	2.26	0.13	3:20	14.11	89.88	121.92	66.35%	5.64	4.40	58.31%	35.33%
1.82	1.72	1.73	0.11	3:29	14.18	142.65	179.86	20.89%	6.42	5.78	39.26%	Standard Deviation

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\* AP = Acceptable Performance (75% Skills Mastery) = 35.33% of 450 students attained 75% skills mastery in Reading (N = 158.98 students)

According to the above table, an estimated 35% of students (N=159) attained acceptable levels of performance in Reading, based on an average of 3 hours and 20 minutes participation in the Pearson Success Maker 5 Program

**Mathematics Performance Measure - Mean = 442 Students**

Level Data				Usage			Instructional Performance			Mastery		
Assigned Course Level	Current Course Level	IP Level	Gain	Time Spent	Total Sessions	Exercises Correct	Exercises Attempted	Exercises % Correct	Skills Assessed	Skills Measured	Skills % Mastered	% Students w/ AP
2.55	2.81	2.63	0.18	3:18	17.41	113.48	162.49	68.96%	27.38	26.73	95.23%	47.96%
1.81	1.62	1.69	0.18	3:16	18.31	136.28	195.48	15.38%	26.40	25.86	17.40%	Standard Deviation

\* AP = Acceptable Performance (75% Skills Mastery) = 47.96% of 442 students attained 75% skills mastery in Mathematics (N= 211.94 students)

According to the above table, an estimated 48% of students (N=212) attained acceptable levels of performance in Mathematics, based on an overall average of 3 hours and 18 minutes participation in the Pearson Success Maker 5 Program

An anecdotal example of student academic success may be illustrated by program implementation at Hilo Union Elementary School, where the Academic Specialist, who is also a teacher at the school, works closely with students, parents, and teachers to ensure students' successful program participation. She established a rewards system for students whereby they receive ribbons of different colors in recognition of academic success and attaining various performance levels. For example, about 38% of students (N=30/79) at Hilo Union Elementary School achieved acceptable performance levels (i.e., 75% skills mastery) in Reading. Similarly, an estimated 71% of students (N=63/89) at the same school have achieved acceptable performance levels (i.e., 75% skills mastery) in Mathematics.

**Cultural Development:**

Students begin each lesson with a Native Hawaiian Chant (*Na Oli* and *Na Mele*), which offers excitement and calmness to help unify and focus their attention before academic lessons.

Students also participate in other cultural activities, that emphasize the importance of *Ohana*, (i.e., family and extended relationships) and address traditional values of cooperation, humility, love, respect, honesty, graciousness, responsibility, working hard, and seeking knowledge, among other ethical principles.

The cultural specialist at Makaha Elementary School developed a cultural booklet to facilitate youth's understanding of the traditional cultural values including

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• <i>Ohana</i>	Family
• <i>Laulima</i>	Cooperation / Partnerships / Community
• <i>Kuleana</i>	Responsibility
• <i>Lokahi</i>	Harmony / Balance
• <i>Pono</i>	Righteousness / Propriety / Goodness
• <i>Olu'olu</i>	Pleasantry
• <i>Ha'aha'a</i>	Humility
• <i>Ahonui</i>	Patience
• <i>Na'auaao</i>	Knowledge
• <i>Akahai</i>	Graciousness
• <i>Kokua</i>	Helpfulness
• <i>Malama</i>	Caring / Consideration
• <i>Pa'ahana</i>	Industriousness

The Cultural Specialist also designed activities to help explain the meaning of cultural values.

**Professional Development:**

The project leadership created two videos to facilitate the professional development of A+ YMCA and *Kama'aina Kids* program personnel and youth development specialists. The first video, is six-hours long, details program goals and activities, poverty issues and cultural considerations, and addresses some of the following program content:

- Positive academic and behavioral outcomes for students facing generational poverty
- Strategies to promote family involvement in educational activities
- Evidence-based academic software to promote increased classroom performance
- Strategies to integrate Native Hawaiian traditions and customs into enrichment programming
- Strategies to implement parent involvement *Digital Media* program

Anecdotal examples regarding success of the professional development activities may be evidenced by unsolicited comments from personnel, which indicate that the videos help them to better plan program activities. For example, one A+ teacher said, *'it was very, very informative and I am so excited . . . that I now have a better view of Tutor Hawaii and what is expected and, am motivated to make next year's program even better. I was so impressed that I shared what I learned with my Staff in our meeting and gave them . . . a sense of pride, as we are builders in making a difference in the lives of the children . . . THANK YOU VERY MUCH!!!!'*

Another A+ teacher said, *"The poverty section . . . was very good. It hit close to home as I was brought up in a home that was strict . . . our livelihood considered very minimal under the poorest conditions . . . I always felt that . . . my upbringing . . . helped me to understand more fully the children I work with that are really in those poverty levels. Having seen the video, . . . I am more equipped to teach, supervise, and role model in a more uplifting way that will benefit not just the child in question, but my entire program and staff. Thank you . . . This is a "must-see" training"*

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The second video, which is designed for Cultural Specialists, is two-hours long and provides an overview of the project's cultural components. Moreover, the Cultural Specialists rely on this content to provide on-the-job instruction about cultural traditions and values to a range of four to six A+ personnel at each school campus.

**Parent Involvement:**

Parental participation was designed to foster the development and implementation of a *Digital Media* summer program component. It hoped to (a) bring families together in multigenerational groups, (b) afford enjoyable learning experiences for parents and children, and (c) generate ideas for parent involvement in education. The program anticipated offering a minimum of two *Digital Media* workshops at each school during summer months. Unfortunately, parents' previous commitments did not enable them to accept the invitation to participate in the *Digital Media* activity.

**Lessons Learned**

Students' actual participation varied significantly among the schools. The time slot for the A+ after school program is from 2:30 PM to 5:30 PM. Yet, many parents may retrieve their children prior to the scheduled close of the A+ after school time period, thereby diminishing the expected time children participate in the program. Moreover, many A+ after school programs offer scheduled activities in which all children must participate (e.g., homework completion, snack time). Thus, it is often difficult to ensure all children's participation in the *Endless Horizons* program as planned originally.

Currently, acceptable academic performance levels are based on students' attainment of 75% skills mastery in the respective subject areas of Reading and Mathematics. In the future, it may be appropriate to calculate youths' academic growth based on (a) academic and cultural specialists' levels of involvement with children, (b) time on academic tasks, and (c) exposure to cultural activities in relationship to students' gains.

Regrettably, parent participation in program activities was minimal. Therefore, it is critically important to initiate parental involvement strategies 'sooner than later' to ensure their ongoing involvement in project implementation and support for their children's education

**Conclusion**

The *blended learning model* helps to promote statistically significant gains in reading and mathematics as well as positive behavioral outcomes for economically disadvantaged and Native Hawaiian students who may face generational poverty. Attainment of these accomplishments relies on collaboration and building professional relationships with colleagues in various organizations is crucial to the success of the *Endless Horizons* project.

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- *YMCA of Hawaii* and *Kama`aina Kids A+* After School Program Personnel
- Kapunas at respective local program sites

**ASSESSMENT OF ACQUISITION OF ENTREPRENEURIAL SKILLS BY  
POLYTECHNIC STUDENTS IN OSUN STATE, NIGERIA**

**Being a Full Paper Submitted to the 12<sup>th</sup> Annual Conference of Hawaii  
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## Abstract

*This paper assesses acquisition of entrepreneurial skills by polytechnic students in Osun State, Nigeria. It identifies courses through which entrepreneurial skills could be acquired; examines availability of training facilities; determines whether or not polytechnic students do the mandatory industrial training or students' industrial work experience scheme, and find out attitudes of students to entrepreneurial skills acquisition. Survey research design was used. The population comprised all the polytechnic students in Higher National Diploma (HND). The sample comprised 300 participants from purposefully selected three government-owned polytechnics. Descriptive and inferential statistics were used to analyze data gathered through structured questionnaire. The results showed that there were over 50 entrepreneurship-based courses offered in polytechnics in the State. Availability of relevant skills training facilities was lacking. Both the industrial training and students' industrial work experience scheme positively contributed to acquisition of skills. Students' attitudes towards entrepreneurial skills acquisition were poor. Relevant workable recommendations were suggested.*

**Key Words:** polytechnic, acquisition, entrepreneurial skills, training facilities

## **Introduction**

Several attempts have been made by successive government in Nigeria from time immemorial to empower the youth with employable skills with a view to alleviating unemployment and poverty. For instance the establishment of National Poverty Eradication Program (NAPEP) 2000/2001, Structural Adjustment Program (SAP) 1988/89, and National Directorate of Employment (NDE) 1986, among others are government efforts towards eradicating joblessness, unemployment and poverty among the people. However, all these programs and government interventions seem not to address the real foundational problem which is hidden in the Nigerian education system and its products. The Polytechnic education in Nigeria is established to impart the youths with practical and employable skills. Regrettably however, contrary seems to be the situation. Teaming number of polytechnic graduates are unemployed and jobless. This scenario is not far-fetched from the fact that they were ill-equipped with entrepreneurial skills in the course of their education. Thus there is need to assess acquisition of entrepreneurial skills by prospective students of polytechnics in the State of Osun, Nigeria with a view to finding out the strengths or weaknesses of polytechnic education in equipping the Nigerian youths with necessary and relevant employable skills. Hence, this study becomes very germane.

The polytechnic education in Nigeria as in other parts of the world is established with a view to imparting relevant and necessary work skills in prospective students. Every course of study in Nigeria polytechnics has potential for entrepreneurship. It is, however, regrettable that most Nigerian youths, who attend polytechnics, lack entrepreneurial skills which could make them to be employable or self-employed/self-reliant after their graduation from school. Kitzer (2007) defined entrepreneurship as a process in which individuals pursue opportunities, fulfilling

needs and wants through innovations, together with the attendant risks. According to Klaipeda Business School (2009) Entrepreneurship is defined as the main skill necessary in order to conform to the conditions of the ever-changing knowledge and information society. Nwanaka and Amaechule (2011) are of the view that Nigeria's social and economic problems will be drastically reduced if students are given adequate vocational training in skills, raw materials, machineries and equipment. According to Maigida, Saba & Namkere (2013), the modern world economy requires innovation, training, reinventing in vocational education and entrepreneurship training that will significantly favor the youth. World over, there is always job for the skilled. Dhenak (2011) laments that though there is abundant labor supply there is generally scarcity of skills at all levels of socio-economy. There is no doubt that joblessness and unemployment continue to grow unabated in Nigeria due to poor acquisition of entrepreneurial/vocational skills. According to Osemeke (2012), a skill implies an ability which can be developed, not necessarily inborn, and which is manifested in performance, not merely in potential. In Europe, according to Klaipeda Business School (2009), all participating institutions in entrepreneurship training have come to a common decision that the entrepreneurial skills the students are able to acquire during their regular study process are not enough for a common European (labor) market. Thus, it is imperative that polytechnic graduates must possess demonstrable work skills.

Nwanaka and Amaechule (2011) emphatically states that it is only with skilled men that materials can be harnessed, manipulated and transformed into products. Likewise, Maigida, Saba & Namkere (2013) believe that entrepreneurship is the practice of consistently converting goods and ideas into productive and profitable commercial ventures. Entrepreneurship is an ability to think creatively and become an effective problem solver (Maigida, Saba & Namkere, 2013). Comfort and Bonaventure (2012) consider entrepreneurial skills as business skills which one

acquires to function effectively in the turbulent business environment as an independent or self-employed person in order to improve one's economic status and the society at large. Maigida, Saba & Namkere (2013) explain that entrepreneurship is a special type of labor that requires the assembling of all factors of production: capital, land and labor and tries to ensure optimum utilization of them to ensure maximum profit. There are resources, materials and potentialities lying fallow unexplored; these are only waiting for the skilled, who will explore, harness, manipulate and transform them into saleable products.

According to Nwanaka and Amaechule (2011) there are three stages in skills acquisition: theoretical, practical and exposure to challenges. An important factor in skills acquisition process is exposure to practical situations where these skills are displayed and utilized. It is thus essential that polytechnic students be given the required practical skills, which they need to cope with emerging challenges of the modern world. In order to expose polytechnic students to real work situations, they are mandated to go for one year industrial training (IT) or students' industrial work experience scheme (SIWES) in job areas relevant to their courses of study after their first two years (Ordinary National Diploma – OND), before proceeding for their Higher National Diploma (HND). The following, according to Comfort and Bonaventure (2012), are the objectives of Students' Industrial Work Experience Scheme (SIWES):

- i. To provide an avenue for students in institutions of higher learning to acquire industrial skills and experience in their courses of study.
- ii. To prepare students for the industrial work situations they are to meet after graduating.
- iii. To expose students to work methods and techniques in handling equipment and machinery that may not be available in their institutions.

- iv. To make the transition from school to the world of work easier and enhance students contacts for later job placement.
- v. To enlist and strengthen employers' involvement in the entire educational process and prepare students for employment in industry and commerce.

Regrettably, Comfort and Bonaventure (2012) found out that the objectives of SIWES were not realized due to lack of seriousness on the part of some students, deployment of some students to offices that have nothing to do with their areas of specialization as well as the insensitivity of their respective institutions in approving placement for students in offices not related to their field of study. These, according Comfort and Bonaventure (2012) adversely affected their level of exposure to practical experiences required for self-reliance, self-employment, and the general employability in public and private sectors of the economy. They believe that students need exposure to areas that will benefit them based on their areas of specialization.

Polytechnic students should be encouraged and made to do their SIWES in workplaces relevant to their courses of study to enable them gain productive and profitable entrepreneurial skills. Comfort and Bonaventure (2012) concluded that one of the major ways students can gain the right experiences is when they are posted to the right offices with the right equipment and facilities; monitored closely and supervised effectively by both the institutions and industries-based supervisors. The youths need exposure in practical entrepreneurial work experience in order to be proficient in their chosen career and be useful to themselves and the society. Entrepreneurship which is a planned effort undertaken by an individual or individuals, institutions or agencies to develop the required competencies in people can easily be addressed through exposure to vocational options. Abubakar (2010) exemplified educational institutions

and workplace as different contexts in which learning experiences may occur. Oziengbe (2009) also identified technical colleges and trade centers as two places where teaching of skills takes place in formal sector. In these centers, individuals are provided with needed skills that will enable them become proficient in both the public workplace and private employment. The principal criterion of skillfulness must be effective action under varying conditions (Maigida, Saba & Namkere, 2013).

Skills can be cultivated or developed (Osemeke, 2012). Therefore to develop entrepreneurial skills in polytechnic students they need to be attached to workplaces for practical orientations. Osemeke (2012) identified conceptual skills, human skills, and technical skills. Technical skills, according to him, imply an understanding of, and proficiency in, a specific kind of entrepreneurial activity, particularly one involving methods, processes, procedures, or techniques. Technical skills involve specialized knowledge, and technical ability within that specialty, and facility in the use of tools and techniques of specific discipline – Osemeke (2012). Polytechnic students must be trained in handling work tools for their self-reliance. Maigida, Saba & Namkere (2013) view that entrepreneurship is a special type of labor that requires the assembling of all factors of production: capital, land and labor and tries to ensure optimum utilization of them to ensure maximum profit.

According to Adeyemo (2009), skill is thought of as a quality of performance which does not depend solely upon a person's fundamental, innate capacities but must be developed through training, practice and experience. Skills represent particular ways of using capacities in relation to environmental demands (Adeyemo, 2009). He further emphasizes that entrepreneurial skills are the basic skills necessary to enable one starts, develops, finances, and succeeds in one's enterprise. He, therefore, identifies the conditions which promote acquisition and the change that

will occur when the skill is acquired as two fundamental issues that must be considered when new skill is to be acquired. Adeyemo (2009) reiterates that a learner of a new skill does not jump into operation without first receiving the necessary verbal instruction. The instruction, perhaps given in bits, units, modules or stages, according to him, must be fused together to form a skillful/skilled performance. It is, however, pathetic that education being received by Nigerian polytechnic students today is nothing more than only verbal instructions without any practical orientations to actualize what is instructed. According to Gumbari (2009), there is no issue that should be addressed as a matter of urgent national importance than that of skills acquisition by the youth considering the failure of our basic education to yield the expected positive results with its attendant consequences such as armed robbery, militancy, kidnapping, abduction for ransom and a lot of others.

According to Araba (2013) entrepreneurship is important as a diffusion mechanism to transform scientific inventions into new product and service innovations. Consequently, Araba (2013) counsels that institutions of higher education should offer chance to develop knowledge intensive high-growth enterprises from all academic disciplines, not just technical ones. He believes that higher education institutions should create an environment that fosters entrepreneurial mind-sets, skills and behaviors across organizations. Lending credence to IT/SIWES, Araba (2013) emphasizes that it is important to involve stakeholders inside and outside of higher education institutions in entrepreneurial skill training. He therefore recommends that if the polytechnic graduates are to enter the business world and entrepreneurship it is necessary to involve business people and entrepreneurs in the academic education process.

In conclusion, importance of entrepreneurial skills acquisition in job/employment creation cannot be overemphasized. Gumbari (2009) says that if third World countries especially Nigeria must be economically self-reliant, they must necessarily diversify their economies and as well encourage the youth to embrace self-employment through appropriate favorable policy environment that would facilitate skills acquisition, entrepreneurship and self-reliance.

### **Purpose of the Study**

The general purpose of this study is to assess acquisition of entrepreneurial skills by polytechnic students in the State of Osun, Nigeria. Specifically, the study sought to:

- i. identify courses/programs from which entrepreneurial skills could be acquired by polytechnic students;
- ii. examine availability of relevant teaching/training facilities with which entrepreneurial skill could be acquired by polytechnic students;
- iii. determine whether or not polytechnic students do their industrial training (I.T) or Students' Industrial Work Experience Scheme (SIWES) programs in job areas related to their course of studies; and,
- iv. find out attitudes of polytechnic students towards acquisition of entrepreneurial skills.

### **Research Questions**

- i. What are the courses/programs from which entrepreneurial skills could be acquired by polytechnic students?
- ii. Are there relevant teaching/training facilities with which entrepreneurial skills could be acquired by polytechnic students?

- iii. Do polytechnic students do their Industrial Training (I.T)/Students Industrial Work Experience Scheme (SIWES) programs in job areas related to their courses of studies?
- iv. What are the attitudes of students of polytechnics towards acquisition of entrepreneurial skills?

### **Hypotheses:**

- i. There will be no significant relationship between the department of students and availability of teaching/training facilities with which entrepreneurial skills could be acquired by polytechnic students.
- ii. There will be no significant difference between the sex of students of polytechnics and their attitude towards acquisition of entrepreneurial skills.
- iii. There will be no significant difference between the year of program of student and whether they do their IT/SIWES in job areas related to their course of studies.

### **Methodology**

A descriptive survey research design was adopted for the study. In a typical survey the researcher selects a sample of respondents and administers a standardized questionnaire to them. The survey design is appropriate for this study, since the study is not truly experimental. Descriptive survey can provide information on the attitudes or other characteristics of a particular group. It is good in collecting information, demonstrate relationships and describe the world as it exists.

The population for this study comprised all the Polytechnic students running their Higher National Diploma (HND) in the State of Osun, Nigeria. There are 5 (five) Polytechnics in the State of Osun 3(three) public owned and 2(two) private owned. These are: Federal Polytechnic

Ede, Osun State Polytechnic Iree, Osun State College of Technology Esa-oke, Interlinks polytechnic Igbajo, and The Polytechnic Ile-Ife. The sample for this study consisted of 300 Higher National Diploma [HND] Polytechnics students drawn from 3 [three] government-owned polytechnics, these are: Federal Polytechnics Ede, Osun State Polytechnics Iree, and Osun State College of Technology Esa-Oke. Purposive and stratified random sampling techniques were employed. The three 3 polytechnics were purposively selected due to the fact that they run many more courses/programs than the private-owned ones, and they have many more accredited courses by the National University Commission [NUC] Than the private-owned Polytechnics. One hundred students were randomly selected from each of the three 3 polytechnics. Each 100 was stratified into 20 students per course/programs at the HND level. The rationale for limiting the sample to HND students is due to the fact that they have had the opportunity to go for the mandatory Industrial Training (I.T) or Students Industrial Work Experience Scheme (SIWES).

The research instrument was a structured/open-ended questionnaire which was divided into two sections: Section A comprised socio-demographic data of the participants, Section B consisted of a 21-item which elicited relevant information from the participants based on the pre-set objective of the study. Participants' responses were based on a four-point rating scale: [1] Agree [2] Strongly Agree [3] Disagree [4] Strongly Disagree. Both the face and the content validity were done with a view to ensuring that items on the questionnaire measure what they are meant for. Data was analyzed using descriptive and inferential statistical method. The data collected were tabulated and grouped according to questions relating to the research questions to which answers are being sought.

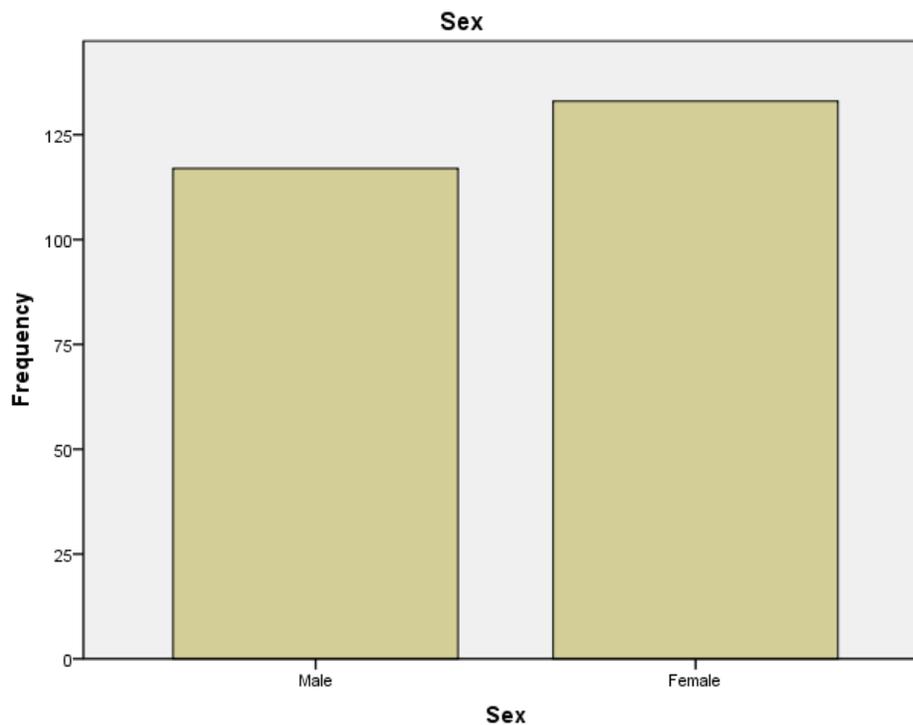
## Data Analysis

The data collected were analyzed using descriptive and inferential statistics involving frequency counts and percentages. Out of the 300 questionnaire administered, 250 were returned and analyzed. The analyses are presented in the following Tables:

## Data Analysis and Discussion of Results

**Table 1: Sex Distribution of the Respondents**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Male	117	46.8	46.8	46.8
Female	133	53.2	53.2	100.0
Total	250	100.0	100.0	

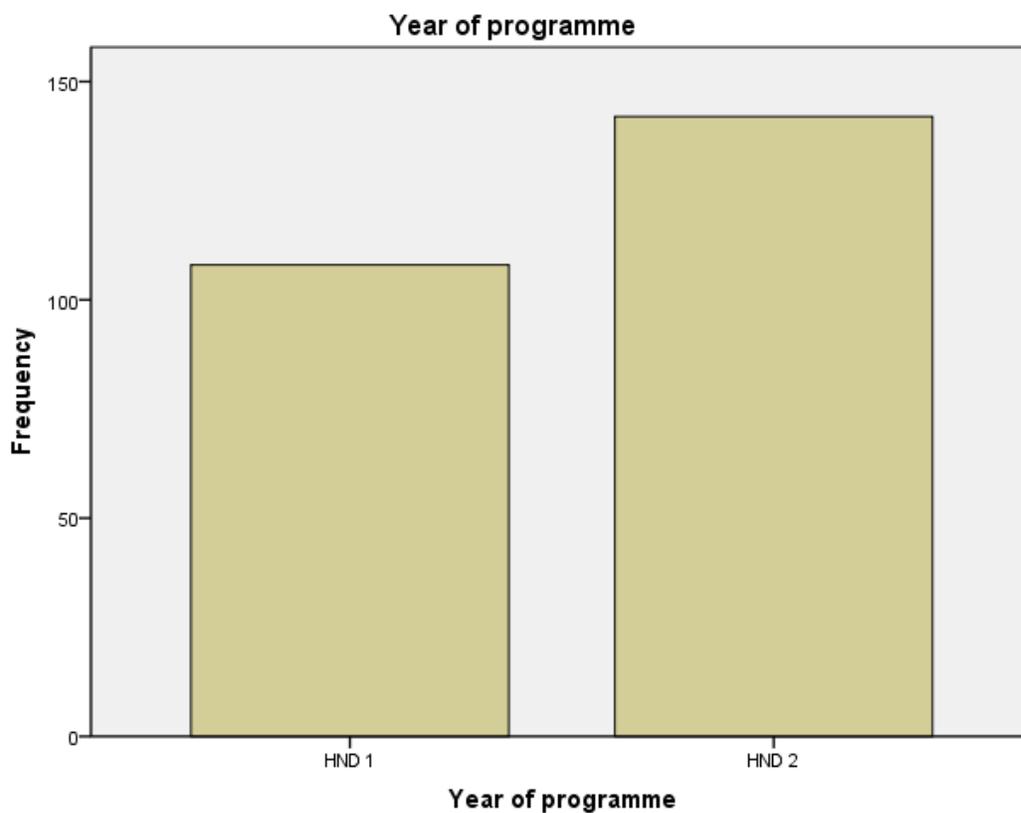


**Figure 1: Sex Distribution of the Respondents**

The analysis on Table 1 and as graphically depicted by Figure 1 shows that 117 (46.8%) and 133 (53.2%) of the participants were males and females respectively. This clearly shows the randomization as per the gender of the participants. Sample was not stratified by gender. However, female respondents are the majority.

**Table 2: Distribution by Year of Program**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid HND 1	108	43.2	43.2	43.2
HND 2	142	56.8	56.8	100.0
Total	250	100.0	100.0	



**Figure 2: Distribution by Year of Program**

Table 2 and Figure 2 show that 108 (43.2%) respondents are in HND 1 while 142 (56.8%) are in HND 2 of their program.

Research question 1: What are the courses/programs from which entrepreneurial skills could be acquired by polytechnic students?

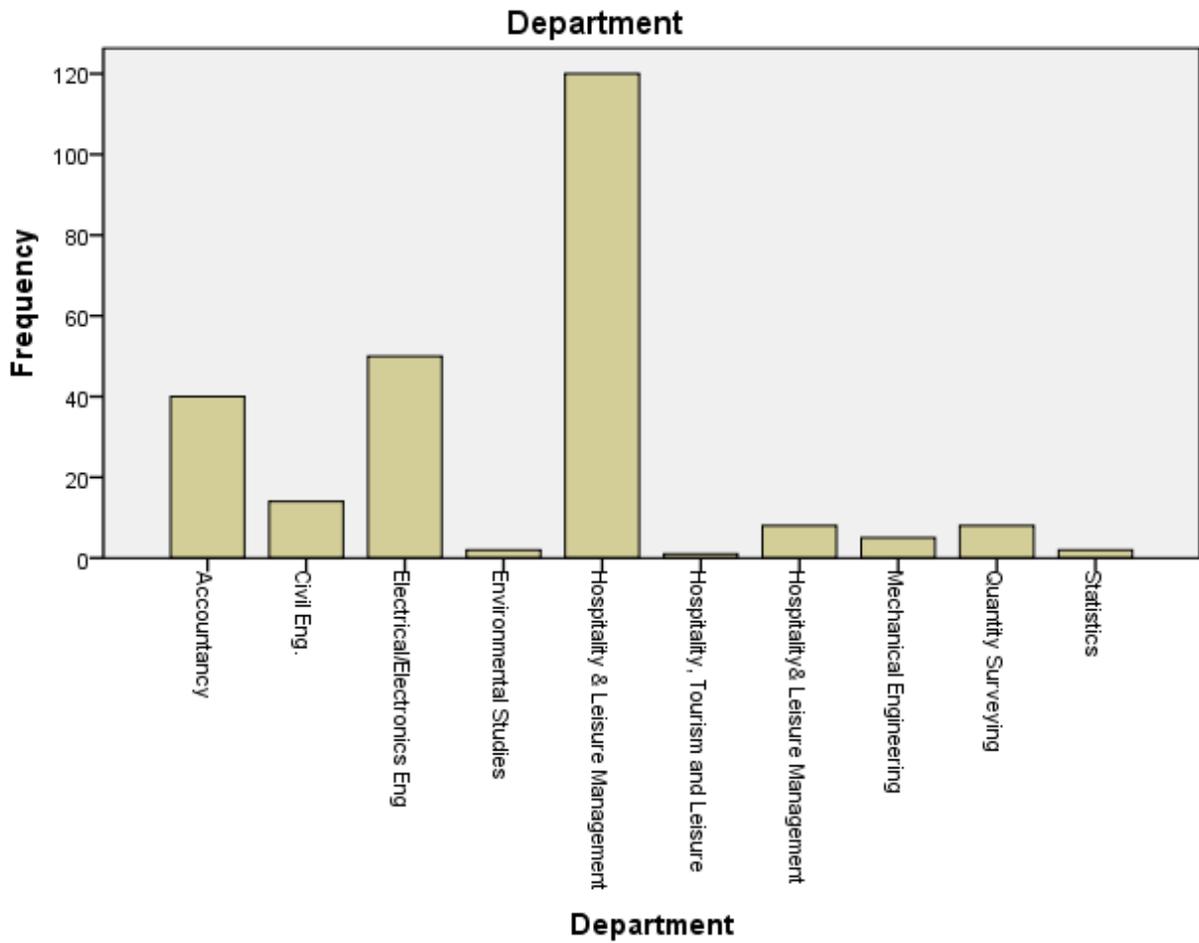
As it earlier been said, all courses being offered in Nigerian polytechnics have entrepreneurial potential which prospective polytechnic students could explore. The available courses in Nigerian polytechnics as contained in the Joint Admissions and Matriculation Board (JAMB) brochure 2011 pages 459-504 are listed hereunder:

Agricultural engineering/technology, animal health and production technology, architectural technology, art and design, banking and finance, building technology, business administration and management, chemical engineering technology, civil engineering technology, computer science, cooperative economics and management, computer engineering, aircraft engineering technology, dental technology, dental therapy, electrical electronics engineering, estate management, fashion design and clothing technology, food technology, forestry technology, fisheries technology, foundry technology, hospitality management, glass/ceramics technology, geological technology, insurance, library and information science, social development, mass communication, mechanical engineering technology, mechatronics engineering technology, metallurgy, mineral resources engineering technology, nutrition and dietetics, printing technology, quantity surveying, polymer technology, science laboratory technology, leather technology, office technology and management, textiles technology, leisure and tourism management, urban and regional planning, wood and paper technology, music technology, surveying and geoinformatics, welding and fabrication technology, community health, health information management, environmental health, and pharmaceutical technology among others.

The polytechnic education in Nigeria has the responsibility of equipping prospective polytechnic students with relevant entrepreneurial skills from the above listed courses with a view to making them possess employable skills as well as self-reliant and self-employed potentials. It is, however, highly disappointing that majority of the polytechnic graduates are still in the job markets years after their graduation from school. The respondents' responses as per the departments and courses they offered in polytechnics are analyzed on Tables 3 and 4 as well as Figures 3 and 4.

**Table 3: Distribution of Respondents by Department**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Accountancy	40	16.0	16.0	16.0
Civil Eng.	14	5.6	5.6	21.6
Electrical/Electronic Eng	50	20.0	20.0	41.6
Environmental Studies	2	.8	.8	42.4
Hospitality & Leisure Management	120	48.0	48.0	90.4
Hospitality, Tourism and Leisure	1	.4	.4	90.8
Hospitality & Leisure Management	8	3.2	3.2	94.0
Mechanical Engineering	5	2.0	2.0	96.0
Quantity Surveying	8	3.2	3.2	99.2
Statistics	2	.8	.8	100.0
Total	250	100.0	100.0	

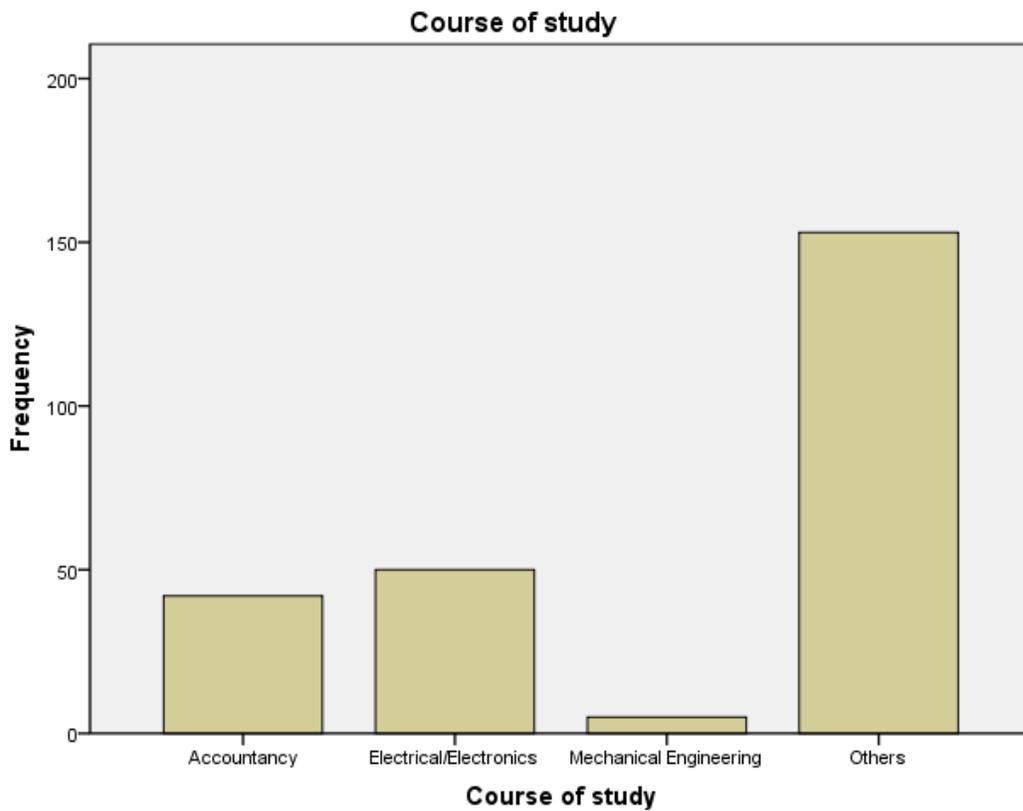


**Figure 3: Distribution of Respondents by Department**

According to Table 3 and shown by Figure 3, 40 (16.0%) respondents study accountancy, 14 (5.6%) study civil engineering, 50 (20.0%) study electrical/electronic engineering, 2 (0.8%) study environmental studies, 128 (51.2.0%) study hospitality & leisure management, 5 (2.0%) study mechanical engineering, 8 (3.2%) study quantity survey while 2 (0.8%) study statistics.

**Table 4: Distribution by Course of Study**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Accountancy	42	16.8	16.8	16.8
	Electrical/Electronics	50	20.0	20.0	36.8
	Mechanical Engineering	5	2.0	2.0	38.8
	Others	153	61.2	61.2	100.0
	Total	250	100.0	100.0	



**Figure 4: Distribution by Course of Study**

Table 4 and Figure 4 shows that 42 (16.8%) respondents study accountancy, 50 (20.0%) study electrical/electronic engineering, 5 (2.0%) study mechanical engineering while 153 (61.2%) study other courses.

Research question 2: Are there relevant teaching/training facilities with which entrepreneurial skills could be acquired by polytechnic students?

**Table 5: Distribution by Availability of Relevant Teaching/Skill Training Facilities**

Variable	Agree	Strongly Agree	Disagree	Strongly Disagree
Relevant training equipment are available for my course of study	69 (27.6%)	5 (2.0%)	11 (4.4%)	165 (66.0%)
The available training equipment are not enough to cope with the number of students	46 (18.4%)	53 (21.2%)	130 (52.0%)	21 (8.4%)
I always have access to using the equipment during practical training	45 (18.0%)	17 (6.8%)	28 (11.2%)	160 (64.09%)
The available equipment are not in good state	125 (50.0%)	55 (22.0%)	69 (27.6%)	1 (0.4)
There is always power supply to power the machines during practical training	156 (62.4%)	46 (18.4%)	20 (8.0%)	28 (11.2%)
The available equipment are obsolete	114 (45.6%)	55 (22.0%)	81 (32.4%)	-
There are experts (technologists) to set and use the equipment to train me during practical training	16 (6.4%)	48 (19.2%)	172 (68.8%)	14 (5.6%)
Though equipment are there but I was never trained with it	157 (62.8%)	6 (2.4%)	85 (34.0%)	2 (0.8%)
There are adequate training/working equipment where I did my IT/SIWES	42 (16.0%)	47 (18.8%)	33 (13.2%)	128 (51.2%)
I had opportunity of using equipment which I did not have access to in my school during my IT/SIWES	43 (17.2%)	176 (70.4%)	7 (2.8%)	24 (9.6%)

Table 5 shows that 69 (27.6%) respondents agreed that relevant training equipment are available for their course of study, 5 (2.0%) strongly agreed, 11 (4.4%) disagreed and 165 (66.0%) strongly disagreed. Also, 46 (18.4%) respondents agreed that the available training equipment are not enough to cope with the number of students, 53 (21.2%) agreed strongly, 130 (52.0%) disagreed and 21 (8.4%) disagreed strongly. Forty-five (18.0%) respondents agreed that they always have access to using the equipment during practical training, 17 (6.8%) agreed strongly, 28 (11.2%) disagreed while 160 (64.0%) disagreed strongly. Likewise, 125 (50.0%)

respondents agreed that available equipment are not in good state, 55 (22.0%) agreed strongly, 69 (27.6%) disagreed and 1 (0.4%) disagreed strongly. One hundred and fifty-six (62.4%) respondents agreed there is always power supply to power the machines during practical training, 46 (18.4%) agreed strongly, 20 (8.0%) disagreed and 28 (11.2%) disagreed strongly; while 114 (45.6%) respondents agreed that the available equipment are obsolete, 55 (22.0%) agreed strongly and 81 (32.4%) disagreed. sixteen (6.4%) agreed that there are experts (technologists) to set and use the equipment to train them during practical training, 48 (19.2%) agreed strongly, 172 (68.8%) disagreed and 14 (5.6%) disagreed strongly; 157 (62.8%) respondents agreed that they were never trained with equipment though available, 6 (2.4%) agreed strongly, 85 (34.0%) disagreed and 2 (0.8%) disagreed strongly. Forty-two (16.8%) respondents agreed that there are adequate training/working equipment where they did their IT/SIWES, 47 (18.8%) agreed strongly, 33 (13.2%) disagreed and 128 (51.2%) disagreed strongly; 43 (17.2%) respondents agreed that they had the opportunity of working with relevant equipment which they did not have access to in their school during IT/SIWES, 176 (70.4%) agreed strongly, 7 (2.8%) disagreed and 24 disagreed strongly.

Research question 3: Do polytechnic students do their Industrial Training (I.T)/Students

Industrial Work Experience Scheme (SIWES) programs in job areas related to their courses of studies?

**Table 6: Distribution by Going on IT/SIWES**

Variable	Agree	Strongly Agree	Disagree	Strongly Disagree
Going on IT/SIWES after my OND was essentially compulsory	135 (54.0%)	85 (34.0%)	5 (2.0%)	25 (10.0%)
I may not go on IT/ SIWES provided I get someone to give me certificate of attendance even without attending	144 (57.6%)	19 (7.6%)	58 (23.2%)	29 (11.6%)
It does not matter whether or not I do my	137 (54.4%)	56 (22.4%)	15 (6.0)	42 (16.8%)

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IT/SIWES in job areas related to my course of study, what is important is just to do it anywhere				
I did my IT/SIWES in job area related to my course of study	186 (74.4%)	32 (12.8%)	20 (8.0%)	12 (4.8%)
I could not get a place in my course of study to do my IT/SIWES but I did it in some other place	13 (5.2%)	50 (20.0%)	153 (61.3%)	34 (13.6%)
I prefer to do my IT/SIWES where I would be paid than a place related to my course of study without payment	149 (59.6%)	26 (10.4%)	47 (18.8%)	28 (11.2%)
My primary assignment where I did my IT/SIWES was directly related to my course of study	165 (66.0%)	56 (22.4%)	4 (1.6%)	25 (10.0%)
I acquired relevant skills during my IT/SIWES program	44 (17.6%)	169 (67.6%)	32 (12.8%)	5 (2.0%)
I sought someone who signed my logbook and issued me certificate of attendance of IT/SIWES because I could not get a place to do it	3 (1.2%)	35 (14.0%)	170 (68.0%)	42 (16.8%)

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From Table 6, 135 (54.0%) respondents agreed that going on IT/SIWES after their OND was essentially compulsory, 85 (34.0%) agreed strongly, 5 (2.0%) disagreed and 25 (10.0%) disagreed strongly. One hundred and forty-four (57.6%) respondents agreed that they may not go on IT/SIWES provided someone could give them certificates of attendance without attending, 19 (7.6%) agreed strongly, 58 (23.2%) disagreed and 29 (11.6%) disagreed strongly; 137 (54.8%) agreed that it does not matter whether or not they do their IT/SIWES in job areas related to my course of study, what is important is just to do it anywhere, 56 (22.4%) agreed strongly, 15 (6.0%) disagreed while 42 (16.8%) disagreed strongly. Also, 186 (74.4%) respondents agreed that they did their IT/SIWES in job areas related to their courses of study, 32 (12.8%) agreed strongly, 20 (8.0%) disagreed and 12 (4.8%) disagreed strongly. Thirteen (5.2%) respondents agreed that they could not get a place to do their IT/SIWES in places related to their course of study, 50 (20.0%) agreed strongly, 153 (61.2%) disagreed while 34 (13.6%) disagreed strongly;

149 (59.6%) respondents agreed that they prefer to do their IT/SIWES where they would be paid than a place related to their course of study without payment, 26 (10.4%) agreed strongly, 47 (18.8%) disagreed and 28 disagreed strongly.

In the same vein, 165 (66.0%) respondents agreed that their primary assignment on IT/SIWES was directly related to my course of study, 56 (22.4%) agreed strongly, 4 (1.6%) disagreed and 25 (10.0%) disagreed strongly; while 44 (17.6%) respondents agreed that they acquired relevant skills during IT/SIWES program, 169 (67.6%) agreed strongly, 32 (12.8%) disagreed and 5 (2.0%) disagreed strongly; and, 3 (1.2%) agreed that they sought someone who signed their logbook and issued to them certificates of attendance of IT/SIWES because they could not get a place to do it, 35 (14.0%) agreed strongly, 170 (68.0%) disagreed and 42 (16.8%) disagreed strongly.

Research question 4: What are the attitudes of students of polytechnics towards acquisition of entrepreneurial skills?

**Table 7: Distribution by Students' Attitudes towards Acquisition of Entrepreneurial Skills**

Variable	Agree	Strongly Agree	Disagree	Strongly Disagree
I may not go on IT/ SIWES provided I get someone to give me certificate of attendance even without attending	144 (57.6%)	19 (7.6%)	58 (23.2%)	29 (11.6%)
It does not matter whether or not I do my IT/SIWES in job areas related to my course of study, what is important is just to do it anywhere	137 (54.4%)	56 (22.4%)	15 (6.0)	42 (16.8%)
I prefer to do my IT/SIWES where I would be paid than a place related to my course of study without payment	149 (59.6%)	26 (10.4%)	47 (18.8%)	28 (11.2%)

Analysis on Table 7 reveals that 144 (57.6%) and 19 (7.6%) agree and strongly agree respectively to not going on IT/SIWES provided there is some to issue certificates of attendance to the students. On the other hand, 58 (23.2%) and 29 (11.6%) disagree and strongly disagree respectively. Also, 137 (54.4%) and 56 (22.4%) felt that they could just do their IT/SIWES anywhere whether or not it related to their courses of study. Disappointingly, 149 (59.6%) and 26 (10.4%) respectively agree and strongly agree to do their IT/SIWES where they would be paid though it might not relate to their courses of study rather than doing it where it relates to their courses of study but without payment. This is negative attitude and portends danger for employment prospects of polytechnic graduates having this kind attitude.

## Tests of Hypotheses

### Hypothesis One

The hypothesis states that “there will be no significant relationship between the department of students and availability of teaching/training facilities with which entrepreneurial skills could be acquired by polytechnic students”.

Course of study \* Relevant training equipment are available for my course study Cross-tabulation  
Count

		Relevant training equipment are available for my course study				Total
		A	SA	D	SD	
Course of study	Accountancy	42	0	0	0	42
	Electrical/Electronics	7	2	4	37	50
	Mechanical Engineering	1	2	2	0	5
	Others	19	1	5	128	153
Total		69	5	11	165	250

### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.228 <sup>a</sup>	9	.000
Likelihood Ratio	18.965	9	.000
Linear-by-Linear Association	8.331	1	.000
N of Valid Cases	250		

$\chi^2$  table = 16.919,  $\chi^2$  calculated = 16.228, df = 9, p = 0.05.

Since table value (16.919) is greater than calculated value (16.228) at 0.05 level of significance, the hypothesis is accepted.

### Hypothesis Two

The hypothesis states “there will be no significant difference between the sex of students of polytechnics and their attitude towards acquisition of entrepreneurial skills”

Sex \* I prefer to do my IT/SIWES where I would be paid than a place related to my course of study without payment Cross-tabulation

Count

		I prefer to do my IT/SIWES where I would be paid than a place related to my course of study without payment				Total
		A	SA	D	SD	
Sex	Male	32	14	43	28	117
	Female	117	12	4	0	133
Total		149	26	47	28	250

### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.843 <sup>a</sup>	3	.000
Likelihood Ratio	12.728	3	.000
Linear-by-Linear Association	10.467	1	.000
N of Valid Cases	250		

$\chi^2$  table = 7.815,  $\chi^2$  calculated = 10.843, df = 3, p = 0.05.

Since calculated value at 0.05 level of significance is less than table value ( $7.815 < 10.843$ ), the hypothesis is rejected and restated as “there will be significant difference between the sex of students and of polytechnics and their attitude towards acquisition of entrepreneurial skills”

### Hypothesis Three

The hypothesis states that “there will be no significant difference between the year of program of student and whether they do their IT/SIWES in job areas related to their course of studies”.

Year of program \* I did my IT/SIWES in job area related to my course of study Cross-tabulation

Count

		I did my IT/SIWES in job area related to my course of study				Total
		A	SA	D	SD	
Year of program	HND 1	97	6	5	0	108
	HND 2	89	26	15	12	142
Total		186	32	20	12	250

## Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.570 <sup>a</sup>	3	.000
Likelihood Ratio	3.105	3	.000
Linear-by-Linear Association	2.201	1	.000
N of Valid Cases	250		

$\chi^2$  table = 2.570,  $\chi^2$  calculated = 7.815, df = 3, p = 0.05.

Since the calculated value (2.570) at 0.05 level of significance is less than the table (7.815), the hypothesis is accepted.

## Findings

The results showed that there are well over 50 different courses from which polytechnic students could acquire entrepreneurial skills. It, therefore, becomes the responsibilities of both the lecturers and the students to explore entrepreneurial skills in these courses with a view to imparting the polytechnic students. The analysis of the data in Table 3 indicated Hospitality and Leisure, Electrical and Electronics, and accountancy have the highest number of 120 (48%), 50 (20%) and 40 (16%) of students respectively. Availability of relevant teaching/skill training facilities was lacking. From the analysis of the data on Table 5, about 176 (70%) disagree and strongly disagree having relevant training equipment for various courses of study being undertaken in polytechnics. Also about 188 (76%) disagree and strongly disagree always having access to using equipment for skills acquisition while in school. About 169 (67%) agree and strongly agree that the available skills acquisition equipment are obsolete. Also, 186 (75%) said that there were no technologist to guide them through using the available training equipment during their practical training, while about 164 (65%) said that they were never trained with any

of the available equipment. All these are not good enough as it only makes the form of education acquired by polytechnic students not to differ from liberal education devoid of entrepreneurial vocational skills.

Both IT and SIWES positively contributed to entrepreneurial skills acquisition by polytechnic students. About 220 (88%) considered going for IT/SIWES essentially compulsory. Also, about 215 (86%) said that they did their IT/SIWES in job areas related to their courses of study. Majority, 203 (85%) confessed acquiring relevant entrepreneurial skills during IT/SIWES. Nevertheless, the attitudes of the polytechnic students towards entrepreneurial skills acquisition could be seen as negative and not encouraging as evidenced from the analysis on Table 7. For instance, about 163 (65%) considered IT/SIWES unnecessary if they could get someone to give to them certificate of attendance even without attending. Also, about 193 (76%) believed that they could just do their IT/SIWES anywhere regardless of whether or not it related to their courses of study. Their attitudes also revealed prioritizing receiving wages over and above acquisition of entrepreneurial skills as about 175 (70%) agree and strongly agree to do their IT/SIWES where they would be paid than a place though related to their courses of study without payment. This attitude is bad and calls for urgent attitudinal re-orientation for polytechnic students.

## **Conclusions**

From the results of this research, the following conclusions could be drawn:

1. There are sufficient and enough courses of study from which polytechnic students could acquire entrepreneurial skills if adequately explored.

2. Adequate availability of relevant equipment that could be used for practical training in entrepreneurial skills acquisition was lacking as well as technical personnel to guide polytechnic students through using the available training equipment.
3. IT/SIWES has positively impacted on entrepreneurial skills acquisition among polytechnic students and should be kept up.
4. Polytechnic students have poor and negative attitudes towards acquisition of entrepreneurial skills.

### **Recommendations:**

Consequent upon the forgoing, the following suggestions are made in respect of subject of this research:

1. Acquirable entrepreneurial skills should be imbedded in all courses of study being offered in polytechnics.
2. Training without relevant equipment will only lead to frustration. All stakeholders in polytechnic education should spare no efforts in ensuring availability of entrepreneurial and vocational skills acquisition facilities in polytechnics.
3. More incentives should be provided for both the students and proprietors/proprietresses of workplaces where prospective polytechnic students could do their IT/SIWES.
4. Drastic and conscious change and attitudinal reorientation of polytechnic students towards IT/SIWES is urgently needed. Prospective IT/SIWES candidates should be given thorough supervision during their IT/SIWES program to ensure total compliance to modus operandi.

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# **A Study on the Factors that Influence and the Change of Junior High School Size in New Taipei City**

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**Abstract.** The purpose of this study is to investigate the change in junior high school sizes as well as the related factors that influence the change within the past ten years (2001~2010). A survey was conducted with a total of 57 school principals, 559 teachers, and 59 parents were sampled from a public junior high schools located in New Taipei City. The authors analyzed these data with descriptive statistic, one way ANOVA, Chi-square test and made following conclusions.

**Keywords:** Junior high school, school size, school effectiveness, Parent education option

## 1. Introduction

Over the past several years, we can see the total student enrollment for both the public junior high and elementary schools in our country has been decreasing due to the low birth rate. Most families tend to avoid having more children than the families of the last generation. Therefore the school size has been reducing to a smaller organization. To face the impact brought by the changing of our school organization, the Department of Education has to invite related scholars and experts as well as the representatives from both county and city governments to have a conference on discussing about the proper school size and to create the strategies on how to transfer the changing of school organizations during this period. However, is the low birth rate the only cause to result in reducing the school size? Take a look at the schools in New Taipei City. For some areas, the population decreased because the people who used to live there kept moving out. It turned out that the schools in these areas had fewer classes due to low birth rate. On the contrary, the population increased instead of decreasing in some areas of New Taipei City. It turned out that new schools had been being built to meet the increase of the new enrollment because a large amount of new residents had been moving in and bringing their children to go to schools here, along with the children whose families had already settled down in the same school districts. Therefore it is necessary to do a research on the related factors to influence the changing of our school organizations so we can find a method to improve the situation.

(1) Impact due to more and more families with fewer children

Low birth rate in our country has already impacted our educational circumstances. The amount of registered students in lots of schools is gradually decreasing. Many small rural schools can only choose to combine with other schools, transfer their schools or stop operating the schools. According to the data from the Statistics Division of the Department of Education, up to twenty two public elementary schools were reorganized from the school year of 89 to the school year of 92. After several times of reorganization, the smaller size schools increase instead of decreasing. In the 93 school year, there were five hundred thirty five small schools with students under one hundred at each school. In the 94 school year, the amount of this kind of small school increased to five hundred sixty six.

According to “The Report of Prediction and Analysis for the Number of Students in a Citizen’s Education Period” (2009), during the six school years of 88 and 93, the number of student enrollment for public elementary schools reduced five thousand each year, from about three hundred nineteen thousand (319,000) down to two hundred eighty nine thousand (289,000). However for the previous six years (from the school year of 81 to 87), the number of the enrollment increased about five hundred each year. It is predicted that the future new enrollment will reduce about thirteen thousand (13,000) students each year from the school year of 93 to the school year of 100, and the student number will reduce from two hundred eighty nine thousand (289,000) in the 93 school year down to two hundred three thousand (203,000) in the 100 school year. The total number for all elementary students will reduce from the number of about one million eight hundred forty three thousand (1,843,000) down to the number of one million five hundred twenty eight thousand (1,528,000) during the school years of 94 to 100. The total new enrollment for all first grade students was two hundred forty two thousand six hundred fifty six (242,656) in the 97 school year. Comparing to the number of all first grade students in the 96 school year, which was two hundred seventy five thousand three hundred fifty two (275,352), there were thirty two thousand six hundred ninety six (32,696) less students. The number of the total classes for all new first grade enrollments was nine thousand five hundred forty six (9,546). Comparing to the number for the 96 school year, which was ten thousand one hundred sixty eight (10,168), there were six hundred twenty two less classes. The total number for all students from the first grade to the six grade in the 97 school year was one million six hundred seventy seven thousand three hundred and three (1,677,303). Comparing to the number for the previous school year, which was one million seven hundred fifty three thousand five hundred ninety one (1,753,591), there were seventy six thousand six hundred forty eight (76,648) less students. The reducing rate per year was 4.37%, which was the highest rate since the 82 school

year and such rate even broke the record. The number of the total classes for all elementary schools was sixty thousand six hundred twenty three (60,623) in the 97 school year. Comparing to sixty one thousand six hundred forty nine (61,649), which was the number of the total classes for the previous school year, there were one thousand twenty six (1,026) less classes. The total number of the teachers was one hundred thousand one hundred eighty two (100,182). Comparing to one hundred and one thousand three hundred fifty two (101,352), there were one thousand one hundred seventy (1,170) less teachers.

In the trend that the student number has been reducing year by year in our country, how have the schools been changing in size? Did all the schools become smaller because the total number of the students has been reducing? Were there any big differences in changing among the schools? Did any school grow into a bigger one instead of decreasing in size? How many schools were there changing in different ways and how were they categorized? This research will study on the schools in New Taipei City. There were differences among the schools from the different school districts. Some schools had difficulties to get enough new students so these schools became to have more teachers than what they really needed. However for those popular junior high schools, they had to set up a limit to control the total number of new enrollment at the beginning of every school year. Students from other school districts were not allowed to be enrolled. What has caused this situation that some schools have been worrying they are not going to have enough new enrollments while some other schools have to control the overwhelming students and reject students from other school districts by setting up a tolerant limit?

## (2) High urban population density

To balance the development between the urban and rural areas is one of the policies that Department of Education has been making an effort to improve for years. Due to the development of economics, there were more industry and business job opportunities in metropolitan areas. (Sun, De-Xuong, Zhang, Min-Zheng 1992) Eighty percent of the population in Taiwan was concentrated in the five main cities on the west plain areas of Taiwan. The people who used to live in rural areas keep moving into urban areas. The development in rural areas slows down to negative growing. The number of the students in the metropolitan areas kept growing due to the high urban population densities. The school size kept expanding. On the contrary, the students in rural areas have been leaving and the school size keeps reducing. It made a great difference between a city and a village. The investment in educational expense turned out to be a waste. (Chen, Shun-Xian, 2000) Therefore the metropolitan development shall not be

neglected because it will affect the education circumstances. It should be taken into consideration in the planning of school development in the future.

### (3) Parents' rights to education choices

The education choices for parents include school choice, educational pattern choice, educational course choice and the future planning such as career choice. School choice means every parent of a student has the freedom and right to select a school. What is implemented in Taiwan now is the school district system. In principle, parents have no right to select a school in Taiwan. Parents' rights to education choice have been implemented in advanced countries such as the United Kingdom and the United States for many years and such rights are still expanding. This tide wave of educational reform in advanced countries has been making an impact on the educational system in Taiwan. The "General Consultative Report"(1996) on education reform, which was published by the Executive Branch of the Government of Taiwan contains a recommendation that parents' rights regarding children education may be strengthened in the aspects of education pattern choice and participation in decisions relevant to education. After 1996, two laws were passed by the government to offer parents the right to education choice with legal protection. These two laws are "The Basic Law of Education" (passed in 1999) and "Citizen Education Law" (passed in 2001).

Human dignity and value were emphasized by the political and social philosophies after the democratization of politics and society in Taiwan. The political and sociological assertions emphasize that the government shall play a role of promoting freedom, rather than a role of being an intimidator. In reality, freedom provides assurance for the quality of both physical and spiritual life of humanity. Since parents' right to education contains an element of reinforcing freedom, it can often promote the mental or spiritual quality of activities in the education system. It increases people interactions in educational activities and provides more aids or assistance to the education system.

The primary system used for enrolling a student into a public junior high school is the school district. Since the school in an assigned school district did not show the educational standard that could meet parents' expectation on the quality of education for their children, some parents had chosen to change household registrations so that their children might be allowed to study in a different school belonging to a different district. The phenomenon of cross district enrollment has existed for a long time. Research papers about the effectiveness of cross district enrollment and related issues have been published since the 1980's. Research regarding cross district enrollment

continued during recent years. We can see that a parent's selection of a desired school has already obviously influenced our education circumstances, though so far our government does not have any promotion plan yet to encourage every parent's right to school choice, which we can see some foreign government already did. Since parents' right to education choice is a trend of modern time, shouldn't schools respond to parents' needs by improving the quality of education?

If the basic assumption for parents' school choice is based on "rules of the market", "competition in the market" (Armor & Peiser, 1998), or what is known as "quasi market pattern" (Schneider, Teske & Marschall, 2000), the manufacturers (the schools) must respond to consumers' liking and needs by changing or improving their services. (The market here refers to the condition that consumers express what they like by selecting other or alternative products or services.) Hence, the change in the sizes of the different types of schools may result from the differences in their characteristics.

## 2. Types of junior high schools in New Taipei City after the changing of school patterns and operations over the last decade

According to the change of school size, the junior high schools in New Taipei City can be grouped into five types that are recessive school, stable school, expanded school, increases after first- reduces school and reduces after first-increases school. The recessive schools have the majority of all schools.

## 3. Factors which affect the changing of the school size

The five types of school sizes are different in some of the input factors. The expanded school type has superiority in school buildings and government grants; while, the recessive school type has inferiority in school buildings, government grants and parents subsidy.

The five types of school sizes are different in some of the process factors. The expanded school type has superiority in principle leadership and the numbers of subject teacher and the budget of developing school-base curriculum.

The five types of school sizes are different in some of the outcome factors. The expanded school type has superiority in school reputation and community relationships; while the recessive school type also has superiority in student behavior routines.

The five types of school sizes are partial different in context factors. There are

more and more populations in expanded schools district and get more and more transfer students in; on the contrary, the recessive schools district get less and less populations and more and more student transfer out.

#### 4. The current situation of the changing of the junior high schools in New Taipei City

(1) To further discuss how the school has been changing when the first grade new enrollment has been reducing in New Taipei City, the new schools built after the 90 school year are here temporarily considered as expanded schools because these schools showed great increases during the first five years after they were ready to accept new students. It is not time yet to comment on their changing rate. Among the recessive schools, the reducing rate exceeding 40% happened to five schools. The highest reducing rate was 48%. That means the total classes at that school in this school year were only the half of the classes that the school had ten years ago. Seven schools had reducing rate between 31% and 40% and another seven schools had reducing rate between 21% and 30%. Reducing rate between 11% and 20% happened to nine schools. There were 28 recessive schools, which shared 37% of all the schools. This rate has exceeded 30%.

(2) The changing rate between minus ten percent and ten percent happened to sixteen schools, which were grouped into stable schools. In the 100 school year, five schools of this type of school were announced as quantity control schools. It means the schools were already full. Among these five schools, three of them were Municipal Complete Middle School (Xiu-Feng, Hi-Shan, Yong-Ping). The stable schools shared 21% of all the schools in New Taipei City.

(3) The expanded schools shared 22%. There were great differences within this type of school. Most of them had growth rate around 11% to 40%. Four of them had super growth rate between 51% and 100%. These four schools were Zhong-Ping Junior High School and Chong-Lin Junior High School in Xin-Zhuang district, Shen-Keng Junior High School in Wen-Shan district and Zhu-Wei Junior High School in Dan-Shui district. The growth rate was 51% for Zhong-Ping and 79% for Chong-Lin. Shen-Keng had 67% growth rate. Zhu-Wei had 97% growth rate, which means the current total classes at this school have doubled the classes that the school had ten years ago. Zhu-Wei was the fastest growing school in New Taipei City.

(4) For the school type of reduces after first-increases, the reducing size schools include Ba-Li Junior High School in Xin-Zhuang district (minus 10%), Lu-Jiang Junior High School in San-Chong district (minus 12%), and Zhang-Shu Junior High

School in Seven Star district (minus10%). The growing type schools include Xi-Kun Junior High School in Banqiao district (11%), Yu-Lin Junior High School (6%) and San-Xia Junior High School(31%) in San-Ying district.

(5) For the school type of increases after first-reduces, the reducing size schools include Tu-Cheng Junior High School in Banqiao district (minus twelve percent), Xin-Tai Junior High School in Xin-Zhuang district (-17%), Lu-Zhou Junior High School in San-chong district (-4%), Jian-shan Junior High School in San-Ying district (-12%) and Ming-De Junior High School with minus fourteen percent. The growing type schools include Yong-He Junior High School in Shuanghe district (9%) and Yi-Xue Junior High School in Xin-Zhuang district (5%).

## 5. Conclusion

Based on the study findings, some suggestions were made as follows:

(1)The government should pay more attention to the equity of resource allocation, and try to avoid discrimination.

(2)The recessive schools should pay more attention to get more resource in order to slow down the student loss.

(3)The stable schools should develop in situation, and pay more attention to educational process and outcome factor.

(4)The expanded schools have superiority in school effectiveness factors and context factors. These schools should go on working hard to keep superiority, and share their experience with other schools.

(5)The increases after first- reduces school and the reduces after first- increases school have to find out the reasons for increases or reduces. Adopting the improvement strategy change the reduced present situation or maintains superiority which increases.

According to the study findings, the author made some suggestions to further research as follows. The purpose of the study should make further discuss and expand object of study and scope. The purposes of the study are multi-dimensional. Regarding the family background factors and community society factors have not be considered but were influenced more by them during the research. For example, the student of native Taiwanese or immigrant residents occupies the majority schools may consider to join the study.

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Teachers who “beat the odds” in early literacy instruction: Video tape and survey evidence from classroom teachers with high “value-added”

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**Introduction**

Much of the discussion in recent years regarding value-added analysis has focused on high stakes personnel decisions (Rothstein, et al., 2010, Goldhaber & Hansen, 2010, Croft, M. et al, 2011 ) Uses of value-added information for program improvement or professional development have received far less discussion (Braun, H., 2010). This paper summarizes value-added analyses in two Minnesota School Districts where early elementary “teachers who beat the odds” were identified through value-added analysis and studied through survey and video tape collection of literacy instructional practices.

The purpose of this paper is to provide background information for the presentation of survey and video tape evidence of early literacy interventions presented at the Hawaii International Conference on Education on January 6, 2013. Study 1 was conducted from 1997 to 1999 provides example of survey results correlated with teacher value-added. Study 2 collected data during the 2004-05 school year and was designed to identify Kindergarten Teachers with high value-added in early literacy so that video tape evidence of their interventions could be shared with other teachers at the district and state level. Both of these studies were conducted in Minneapolis (MN) Public Schools. Study 3 was conducted in Bloomington (MN) Public Schools during the 2011-12 school year as a replication of Study 1 but with video tape evidence in place of survey data.

**Study 1: Teachers who beat the odds in grade two literacy**

This study was designed to establish a measure of teacher effectiveness in reading and to investigate the degree of stability of that measure over time. A second purpose of the study was to investigate teacher philosophy, opinions and instructional behaviors associated with effective early reading instruction. Methodologically, this study was designed to isolate teacher effects from other sources of achievement variance so that instructional variables associated with reading achievement would be identified while controlling statistically for student characteristic differences. Teacher effectiveness in this study was operationally defined as the individual teacher "value-added" (Meyer, 1996) fixed effects regression coefficient  $\eta_s$  in the following general equation:

$$\text{PostTest}_{iS} = \gamma + \theta \text{PreTest}_{iS} + \alpha \text{StudChar}_{iS} + \eta_s + \varepsilon_{iS}.$$

where  $i$  indexes individual students and  $s$  indexes teachers;  $\text{PostTest}_{iS}$  and  $\text{PreTest}_{iS}$  represent student reading achievement for a given student in second grade and first grade, respectively;  $\text{StudChar}$  represents a set of individual and family characteristics assumed to determine growth in student achievement growth;  $\varepsilon_{iS}$ , the error term, captures the unobserved student-level determinants of achievement growth;  $\gamma$  is a constant;  $\theta$  and  $\alpha$  are model parameters that must be estimated; and  $\eta_s$  is

the teacher effect that must be estimated. Teacher effects, calculated through this equation, represent the contribution of a given teacher to growth in student achievement after controlling for all student-level factors. California Achievement Tests "Total Reading" normal curve equivalent (NCE) scores were used as the pretest (spring grade 1) and posttest (spring, grade 2).

Student characteristics in this regression equation are defined as follows:

$\alpha_1$  = Free or reduced price at the time of the posttest; "0" for full price lunch.

$\alpha_2$  = Resides with - coded "1" for lives with two parents; "0" for other living arrangements including single mother, single father, relative, by self;

$\alpha_3$  = Limited English Proficient (LEP) - coded "1" enrolled at the time of posttest in Limited English Proficiency Programs; "0" non LEP;

$\alpha_4$  = Special Education - coded "1" for current individual education plan (IEP) at the time of the posttest; "0" for no current IEP;

$\alpha_5$  = African American - coded "1" for enrolled as "African American" for; "0" enrolled as Asian, Hispanic, White or American Indian;

$\alpha_6$  = American Indian - coded "1" for enrolled as African American; "0" enrolled as Asian, Hispanic, White or American Indian.

$\alpha_7$  = Resides in a high poverty zip code (from census)

$\alpha_8$  = Gender – "1" for male; "0" for female

This study was conducted with approval from Minneapolis Public Schools (MPS) central office personnel and the president of the Minnesota Teacher's Federation, Local 59 which represents MPS teachers in collective bargaining. In accordance with this agreement, all teacher names were kept strictly confidential. Several sources of information were used to verify teacher assignments to homerooms during the three years of the study. Teacher rosters collected from every school were cross-referenced with the district staff directory of teachers assigned to each school. For Year 2 and Year 3, the homeroom field coded on the standardized testing data tape received from the test publisher was used as a third source to verify these data.

A three-part teacher survey was constructed to assess reading instruction strategies, general philosophy of reading instruction, and use of test preparation activities for teachers who instructed second grade students during the school year. The first page of this survey was adapted from a reading study conducted by Doug Marston, a Minneapolis School Psychologist. The 26 items on the original survey were examined with a factor analysis and found to have two main factors: one with direct-instruction/phonics type items (i.e. initial guided practice, individual oral reading, explicit phonics instruction, frequent & direct progress monitoring, present material in small steps, development of word attack strategies, develop sight vocabulary); and the other was a whole language & reading/writing process factor (i.e. shared book experiences, journal writing, emphasize meaning during

reading, encourage prediction during reading, literature extension activities, share published books/projects, collaborative writing). Four items from the original survey were eliminated because they correlated equally with the two main factors. The final survey was formatted for scanning with an electronic scanning machine.

The second page of the survey dealt with general reading instruction practices and philosophy. These items were filled out with the whole class in mind and the teacher was asked to mark each response on a line 100 centimeters long to questions related to instructional grouping practices, degree of teacher direction, and philosophy of reading instruction. Following this section, 3 questions regarding use of test preparation materials were asked. On the third page of the survey, each teacher was asked what, if any, published test preparation materials were used prior to the previous year spring achievement testing. One purpose of this study was to determine the stability of teacher effectiveness in second grade reading instruction. A value-added regression coefficient was calculated for each teacher for each of three consecutive years. Unstandardized regression coefficients for the pre-test and demographic variables are presented in Table 1. These coefficients are in nce units which have a mean of 50 and standard deviation of 21.06 in the standard normal distribution.

**Table 1. Unstandardized regression coefficients for all three study years**

Variable	Year 1	standard error	Year 2	standard error	Year 3	standard error
Constant	16.14	1.15	16.88	1.15	15.24	1.30
Total Reading pre-test	0.73	0.01	0.74	0.01	0.72	0.01
African American	-4.37	0.66	-4.79	0.65	-3.01	0.72
American Indian	-3.73	1.10	-5.19	1.09	-3.26	1.28
Gender	-1.92	0.50	-0.96	0.48	-2.86	0.52
Lives with 2 parents	0.80	0.61	0.12	0.58	0.55	0.63
Free/reduced price lunch	-4.07	0.67	-5.00	0.67	-3.92	0.72
Resides in High Poverty Zip	-0.67	0.62	-0.78	0.65	-1.50	0.71
Limited English Proficiency	-6.59	1.17	-4.95	0.98	1.08	1.08
Special Education	-3.69	0.89	-5.09	0.78	-5.97	0.94

Pearson product moment correlation coefficients were calculated for all three combinations; Year 1: Year 2, Year 2: Year 3 and Year 1: Year 3. Stability coefficients increased with the size of classroom cohorts, as noted in Figure 1. The median stability coefficient for 132 classrooms with at least 7 students in the pre-post classroom cohort for both years was .449 [ $t_{(131)} = 5.46$ ;  $p < .001$ ]. The median stability coefficient for 87 classrooms with at least 12 students in the cohort for both years was .519

[ $t_{(86)} = 5.62$ ;  $p < .001$ ]. A generalizability study (G-study) was conducted on the 101 teacher effects for classrooms with at least 7 students in each of the three study years. With teacher as the facet of differentiation and occasion as the random facet, the generalizability coefficient (similar to Cronbach's Alpha) was .737.

**Correlates of Teacher Effects:**

Teacher effects for the 101 classrooms with at least 7 students in each of the three study years were used to categorize teachers in the top 20%. Teachers who appeared in the top 20% all three study years (6), and teachers who were in the top 20% two of three years (12), were termed "exceptional." These coefficients were matched with the file of returned surveys to form a file of 68 teachers: 11 "exceptional" teachers, and 57 "other" teachers.

**Table 2. Differences Between Exceptional and Other Teachers on 22 Specific Reading Strategies for Low-Achieving Students.**

Variable	Exceptional Teacher Mean Rank	Other Teacher Mean Rank	P value <sup>1</sup>
Begin a lesson with a short review	32.5	34.9	.69
Shared book experiences	30.3	35.3	.41
Have student visualize while reading	36.0	33.7	.71
Independent reading	40.0	33.4	.28
Modeling of reading for student	30.3	35.3	.38
<b>Development of word attack strategies</b>	<b>45.5*</b>	<b>32.4</b>	<b>.03</b>
Present new material in small steps	33.9	34.6	.90
Student reads non-fiction material.	41.0	33.3	.20
Student shares own published books	31.6	35.1	.59
<b>Individual student oral reading</b>	<b>43.9</b>	<b>32.7</b>	<b>.06</b>
Choral reading	33.8	34.6	.29
Journal writing	40.2	33.4	.27
Emphasize meaning during reading	37.5	33.9	.55
<b>Guide student during initial practice</b>	<b>44.6*</b>	<b>32.6</b>	<b>.04</b>
Encourage prediction while reading	36.1	34.2	.75
Develop sight vocabulary	40.4	33.4	.25

<sup>1</sup> Results of Mann-Whitney sum of ranks statistics and approximate t-test

Spelling homework and spelling assessment	39.5	33.5	.32
Whole language approach	35.9	34.2	.78
Collaborative writing	40.4	33.4	.25
<b>Explicit and direct phonics instruction</b>	<b>44.5*</b>	<b>32.6</b>	<b>.05</b>
Monitor student reading progress directly	38.2	33.8	.46
Literature extension activities	30.9	35.2	.49

Teachers identified as exceptional also reported using systematic motivational strategies 82% of the time while 51% of “other teachers” reported using systematic motivational strategies (see Table 3). This difference was statistically dependable [ $t(66)=2.22$ ;  $p=.04$ ].

**Table 3. Difference between “exceptional teachers” and “other teachers” on use of systematic motivational strategies (coded 1 = yes, 0 = no).**

Variable	Number of Cases	Mean	SD	SE of Mean
MOTIVATION				
Other teachers	57	.5088	.504	.067
Exceptional teachers	11	.8182	.405	.122

Mean Difference =  $-.3094$

The survey variables which dependably distinguished “exceptional teachers” from “other teachers” included the following:

- more small group reading instruction,
- more guidance of student during initial practice,
- more use of systematic motivational strategies.
- more development of word attack strategies,
- more explicit and direct phonics instruction, and
- more use of individual student oral reading

### **Study 2: Kindergarten Teachers Who Beat the Odds**

A fixed effects regression analysis was conducted on student assessments in Kindergarten in Minneapolis Public Schools using the MPS Beginning of Kindergarten Assessment (BKA) in the

fall and MPS End of Kindergarten Assessment (EKA) in the spring to identify teachers who had very high value-added estimates in literacy.

The BKA and EKA assessments have been validating with longitudinal analysis of predictive and construct validity (Betts, J., Pickart M. & Heistad, D., 2009). These measures include items from the University of Minnesota Individual Growth and Development Indicators (IGDI), the Illinois Assessment of Early Literacy (ISEL, see Illinois State Board of Education, 2013) and Minneapolis Curriculum Based Measures (Marston, D. et al, 2007). Areas of literacy assessed by the BKA and EKA include the alphabetic principle (letter names and letter sounds), phonological awareness (alliteration and rhyming), picture vocabulary, listening comprehension and concepts of print. In the spring oral reading of a simple first grade text is included. Predictive validity between the BKA and EKA was .81; correlation with spring grade 1 oral reading (1.75 years later) was .74; and correlation with the Measures of Academic Progress (MAP, 2.75 years later) was .70.

Similar predictors to study 1 were used, however the magnitude of gender, poverty and ELL effects varied from the Grade 2 analysis (see Table 3). Receiving ELL services was a positive predictor for reading fluency and gender was a much larger effect than free or reduced price lunch.

**Table 3. Kindergarten Beat the Odds Regression Coefficients with Oral Reading Fluency as the Dependent Variable.**

Model		Coefficients <sup>a</sup>				
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	30.699	1.935		15.864	.000
	falltotlit	.334	.009	.683	37.622	.000
	Free or reduced price lunch dummy code	-1.031	1.578	-.013	-.654	.513
	ell2003	6.521	1.750	.070	3.726	.000
	African American Dummy Code	-6.580	1.549	-.079	-4.247	.000
	American Indian Dummy Code	-3.543	3.272	-.018	-1.083	.279
	Male = 1	-6.489	1.248	-.082	-5.199	.000
	sped status	-8.546	2.366	-.057	-3.613	.000

a. Dependent Variable: AverageWordsPerMinute

For this study teachers were identified based on the beginning and end of year kindergarten assessments from 2003-2004 school year. A value added analysis was completed to see which teachers made better than expected growth with their students on early literacy measures. The top 10 kindergarten teachers were interviewed and videotaped. Video tapes lessons demonstrated many of the critical literacy development skills highlighted in the National Reading Panel ( see <http://www.nichd.nih.gov/publications/nrp/findings.cfm>).

Beat the Odds Teachers shared common characteristics in the areas of behavior management, instruction and continuous professional development (see videos on-line at [http://rea.mpls.k12.mn.us/uploads/teachers\\_who\\_beat\\_the\\_odds.pdf](http://rea.mpls.k12.mn.us/uploads/teachers_who_beat_the_odds.pdf))

### **Behavior Management**

- Positive and consistent feedback
- High expectations for all students
- High percentage of student time on task
- Materials are organized and readily available
- Students Know the Daily Routine
- Models appropriate classroom behavior
- Establishes welcoming environment

### **Kindergarten Literacy Instruction**

- Utilizes small flexible group instruction based on progress monitoring data
- High expectations for academic achievement
- Structures time and materials to maximize student learning
- Makes connections to previous learning
- Uses variety of instructional approaches
- Uses writing activities to support other literacy instruction

The cost of this initiative was approximately \$50,000/year including development of beginning and end of Kindergarten literacy assessments in the areas of oral language comprehension, concepts of print, phonological awareness, alphabetic principle, and reading fluency (end of kindergarten only); administration of assessments fall, winter and spring with a cadre of retired elementary school teachers; and collection of teacher behaviors using structured interviews and videotaping.

A matched sample analysis of reading gains one year after the initial study (Heistad, 2005) found that statistically significant reading fluency gains were maintained by students of the “beat the odd” kindergarten teachers.

### **Study 3: Teachers who beat the odds in grade two literacy replicated in Bloomington Public Schools, MN**

This study was designed to replicate the statistical model used in Study 1 with a different population of students in a suburb of Minneapolis. The Measures of Academic Progress (MAP, NWEA, 2013) reading scale score was used as the pretest at the beginning of Grade 2 in fall and the post-test was the spring grade 2 reading scale score. Three consecutive cohorts of student scores (i.e., school years 2009-10, 2010-11 and 2011-12) were collected in fall and spring. As is study 1, student demographics and teacher

dummy codes were analyzed with a fixed effects regression model. Coefficients for the pretest and demographics are presented in Table 4.

**Table 4. Unstandardized regression coefficients for all three study years**

Variable	Year 1	standard error	Year 2	standard error	Year 3	standard error
Constant	85.19	4.36	82.89	5.19	115.09	1.30
MAP Reading pre-test	0.63	0.02	0.64	0.02	0.48	0.01
African American	-2.53	1.02	-2.77	0.65	-1.73	1.09
American Indian	-1.95	3.85	1.10	4.42	-3.26	1.28
Hispanic	-2.94	1.29	-1.50	1.26	-0.24	1.35
Asian	-2.62	1.15	-0.73	1.21	-0.24	1.37
Gender	-0.56	0.66	.66	1.02	-0.98	0.73
Free/reduced price lunch	-1.50	0.85	-0.17	0.87	-3.92	0.72
Limited English Proficiency	-0.48	1.09	-3.45	1.09	-4.93	1.19
Special Education	-5.73	1.26	-7.07	1.21	-5.97	0.94

Comparing these coefficients from Bloomington grade 2 students to Table 1 with Minneapolis Public Schools (MPS) students, it appears that Special Education, LEP and Free/reduced lunch are important predictors in both districts but the racial/ethnic and gender predictors are more powerful correlates in the large urban setting of MPS.

Teacher value-added estimates were generated in two stages using the linear regression package in SPSS. In the first step the multiple regression, with pretest and all demographics, was performed with teacher dummy codes and the residuals from the regression were saved in the data file. These residuals were averaged for all 2<sup>nd</sup> grade teachers. The teacher with mean residuals closest to zero was chosen as the contrast teacher for dummy coding. A teacher dummy code (i.e., “0” for not in the class, “1” for in the class) was created for each classroom except the contrast teacher. Teacher dummy codes were then entered into the full regression with all predictors included. A sample of the output is presented in Table 5.

These teacher coefficients were averaged across all three years of the study weighted by the number of students. Coefficients for 36 second grade teachers were generated across the three years of the study. The teacher with the highest weighted mean was identified for “beat the odds” second grade literacy instruction. An early literacy expert in Bloomington Public Schools interviewed the teacher and took video tape of a typical one hour literacy session. This teacher presented a synopsis of her literacy

instruction to the curriculum department and presented at recent School Board meeting. She emphasized the use of embedded vocabulary instruction and a collaborative approach to lesson preparation with her grade level team (Amber Geehan, Oct 14<sup>th</sup> found at <http://www.youtube.com/watch?v=4ec57PQNUK0>, starting at minute 40).

**Table 5. Truncated output for 2010-11 Grade 2 Teacher Level Value-added**

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	82.894	5.190		15.973	.000
	CALT Reading Fall 2010 Scale Score	.644	.024	.732	26.380	.000
	frlunch	.175	.868	.006	.202	.840
	American Indian	1.104	4.421	.006	.250	.803
	Asian	-.729	1.207	-.015	-.604	.546
	Hispanic	-1.496	1.262	-.036	-1.185	.236
	African American	-2.777	1.065	-.072	-2.608	.009
	ESL	-3.445	1.089	-.092	-3.165	.002
	SpEd	-7.073	1.212	-.134	-5.834	.000
	T107	1.000	2.535	.011	.395	.693
	T114	-2.322	2.442	-.029	-.951	.342
	T124	-3.296	2.925	-.033	-1.127	.260
	T127	-.506	2.444	-.006	-.207	.836
	T128	-.390	2.685	-.004	-.145	.885
	T130	-.459	2.725	-.005	-.168	.866
	T136	-1.187	2.529	-.014	-.469	.639
	T137	1.806	2.740	.019	.659	.510
	T141	3.689	2.600	.041	1.419	.156
	T147	-7.240	2.642	-.080	-2.740	.006
	T148	-1.416	2.532	-.016	-.559	.576
	T163	-2.375	2.414	-.031	-.984	.326
	T164	-.261	2.666	-.003	-.098	.922
	T164	8.943	2.960	.085	3.021	.003

As in Study 1, Pearson product moment correlation coefficients were calculated for all three combinations; Year 1: Year 2, Year 2: Year 3 and Year 1: Year 3. The median stability coefficient for classrooms with at least 7 students in the pre-post classroom cohort for both years was .475. With teacher as the facet of differentiation and occasion as the random facet, the generalizability coefficient for three occasions (similar to Cronbach's Alpha) was .626. Stability coefficients of this magnitude reinforce the need to average teacher coefficients over three years.

## Discussion

Formative use of value-added analysis including correlations with instructional surveys and video tape evidence on “beat the odds” teachers can be an effective tool for school districts to highlight the most effective instruction in a particular discipline. In this paper three studies of early literacy growth in standardized test scores were briefly summarized that provided this type of information to two school districts in Minnesota. The value-added models identify teachers with exceptional literacy growth while controlling for prior learning and student demographic characteristics. It is a more equitable way to identify exceptional teachers than student proficiency or simple growth models (Meyer, R., 1996). Teacher value-added effects are moderately stable across time (Sass, 2008; Loeb & Candelaria, 2012) and offer the possibility for highlighting the “most decisive factor in student achievement” (Gates, 2011). Using value-added to identify exceptional teachers and then observing, video-taping, doing correlational or experimental research using these teachers, follows in the tradition of discovery of expert pedagogues captured by David Berliner (1986). In his presidential address to AERA that year he said the following:

“We will continue our pursuit of the expert pedagogue. If we ever feel really secure that we have found a few of these elusive beasts, we will study them in great depth and share those findings with those who also await their capture. Like the search for the Yeti and for Bigfoot, we expect to have a good many false sightings and a good deal of fun along the way” (op cit, p. 13)

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# **LITERACY, AGE AND INCOME AS DETERMINANT OF PARTICIPATION IN NATIONAL PROGRAMME ON IMMUNIZATION IN OGUN STATE, NIGERIA**

**BY**

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This study investigated the influence of literacy level, age. And income factors on women participation in National Programme on Immunization (NPI) in Ogun state, Nigeria.

The study adopted descriptive survey research design. Stratified and Random sampling techniques were used to select two hundred respondents. The major instrument used from data collection was a 4-pont scale questionnaire. The instrument was validated through consultation with specialist in health education, adult education and community development. The reliability co-efficient of 0.82 was obtained through test-retest method. The target population for this study consist of women of childbearing age (15-50 years) who have given birth to at least a child in the last five years and participated in immunization programme. The descriptive statistics, correlation and regression analysis were employed for data analysis and hypotheses testing. The descriptive statistics revealed that most respondents (51%) fall within the range of 25-34 years with 92.5% of them being married. The household size ranged from 3-13 with the average of 5 members per household. The correlation analysis showed that age of women had a significant positive correlation with the level of participation in immunization ( $r = 0.144$ ,  $p < 0.05$ ). The study further established a significant relationship between literacy level and participation in immunization ( $r = 0.212$ ,  $p < 0.01$ ). The regression result revealed that the income of the respondents was a major factor that contributed to women participation in immunization. The study recommended among others, that income generating activities, women literacy and empowerment programme should be provided by both government and non-government organization

Keywords: Literacy, Income, Age, Participation

## **Introduction**

Health is something that concerns every citizen of the world for one reason or the other. This is significant because the United Nations (UN) through its agency World Health Organization (WHO) had set a target for achieving health for all by the year 2000. This was interpreted differently by each country in the light of its social and economic characteristics, health status and mortality patterns of its population, and the state of development of its health system. In 1988, the World Health Assembly – the governing body for the World health Organization – set a target for WHO to eradicate polio from the world by the end of year 2000 (since extended to 2002). This followed the successful eradication of small pox diseases globally. This showed that polio eradication is technically feasible. Nigeria as a world health assembly member signed to implement this resolution by adopting national health policy and strategy to achieve health for all and this was based on primary health care; one of the components is immunization against major infectious diseases.

The National Programme on Immunization (NPI) was then put in place to protect all children age 0-5 against six deadly childhood diseases: measles, tetanus, whooping cough, poliomyelitis, diphtheria and tuberculosis. Between 1991-2000, the targeted annual coverage for children in Ogun state was 84.8% (NPI) Report (2004). This near full coverage was attributed to intensification of health education and enlightenment programmes for the communities through the mass media and various methods of information dissemination such as the television, market places, Expanded Programme on Immunization (EPI) clinics (Babtunde, 2001). Despite the targeted annual coverage of 84.8% some of these diseases such as polio myelitis measles and tuberculosis are still prevalent among children in Ogun state.

The persistence of the childhood killer diseases among children of 0-5 years serves as health risk and affects the health status of children in the community. There have been five hundred and twenty-two recently confirmed wild polioviruses (WPV) in Nigeria with 75% of

the wild polioviruses below 3 years of age and 74% of the cases have received less than three doses of oral polio vaccines(OPV) (WHO, 2005). The report further showed that Nigeria is one of the countries with poor health infrastructure and hundreds of reported polio cases. To ensure that the health status of children is improved, most especially, at this crucial time when Nigeria is very desperate at stopping poliovirus transmission and other childhood killer diseases, it is very important to critically examine the influence of literacy level, age and income on women participation in National Programme on Immunization (NPI) in Ogun State, Nigeria because women are charged with the responsibility of bringing their children to the immunization centres.

This study therefore provides answers to the following research questions.

1. To what extent does literacy level of women affects their participation in National programme on immunization (NPI)
2. What is the influence of income level on women participation in Immunization?
3. To what extent does age affects women participation in NPI?

### **Objectives of the study**

The study is designed to:

1. examine the influence of literacy level on women participation in National programme on Immunization in Ogun State
2. assess the influence of age on women participation in immunization programme
3. determine the impact of income level on women participation in NPI in the study area
4. Offer policy recommendations based on the research findings

### **Hypotheses**

H<sub>01</sub>: There is no significant relationship between the literacy level of women and participation in immunization programme

H<sub>02</sub> There is no significant relationship between age of women and participation in National Programme on Immunization

H<sub>03</sub>: There is no significant relationship between income level of women and participation in NPI

### **Methodology**

This study is a descriptive survey of non-experimental type. This method was adopted because it describes systematically the facts, qualities and characteristics of a given population, event or areas of interest as factually, and accurately as possible.

The target population of this study consists all women of child bearing age (15- 50 years) who have given birth to at least a child in the last five years and have participated in the National Programme on Immunization.

The children are the main target group for immunization regimen while the mothers are the relevant population since it is the group that are mostly entrusted with the care of the children and also responsible for bringing the children for immunization.

Random sampling technique was employed to select the respondents from the selected local governments. Abeokuta North, Abeokuta South and Odeda Local Governments were purposively selected because they have been participating in Immunization programme since inception.

From each of the three local governments eighty respondents were randomly selected to give a total of 240 respondents involved in the study. A total of 200 copies of questionnaire were returned and used for analysis.

### **Instrumentation**

The instrument for collecting data from the respondents is a structured questionnaire. This was supplemented by interview, observation and past records. Section “A” contains demographic variables of the respondents while section “B” consists of variables under study.

The instrument examined the influence of literacy level, age and income factors on participation on immunization programme. The structured questionnaire was validated through consultation with experts in adult education, community development and health education. The reliability index of 0.82 was obtained through test-retest method using Pearson r formula.

The statistical tools employed for data analysis include frequency distribution and percentage analysis, correlation and regression analysis.

The socio-economic characteristics of the respondents were describes using descriptive statistics such as frequency table, percentages, etc while correlation was used to test the hypotheses at 0.01 and 0.05 level of significance.

## Analysis of data

This section analyses data collected and discusses the results as follows

**Table 1 Distribution of respondents by Age**

Age (years)	Frequency	Percentage (%)	Cumulative (%)
15-24	26	13	13
25-34	102	51	64
35-44	68	34	98
45-54	4	2	100
Total	200	100	

Table 1 above shows the age distribution of respondents. The modal age bracket was 25-34 years containing 50% of the total respondents. The 35-44 years was the next to the modal category containing 34%, this is followed by 15-24 years which constitutes about 13%. The respondents whose age falls between 45 – 54 years constituted the least (2%). The implication of this is that women no longer produce children to the age of menopause as economic hardships starve them on their face. Consequently, the mean age of the respondents was 33 years showing that majority of the mothers were in their active reproductive age. The dominance of the active reproductive aged mothers shows the valid state of the expected responses for the study

**Table 2 Distribution of Respondents by Educational Status**

<b>Educational Status</b>	<b>Frequency</b>	<b>Percentage (%)</b>	<b>Cumulative (%)</b>
No Formal education	12	6	6
Arabic	1	0.5	6.5
Primary	26	13	19.5
Secondary	55	27.5	47.0
Technical college	-	-	-
NCE/OND	40	20.0	67.0
HND/BSc.	53	26.5	93.5
MSc/Ph.D	13	6.5	100
Total	200	100	

Table 2 shows the educational qualification of the respondents. The result indicated that those who did not have any formal education accounted for 6%, 13% had primary education while 27.5% had secondary education which constituted the highest represented group. However, the least represented group was Arabic education with 0.5% while 20% indicated that they had NCE/OND qualification. The remaining 33% had academic qualifications ranging from BSc. –PhD level.

This high literacy level is expected to have a positive impact on mother's attitude to immunization. The high level of awareness about NPI may not be unconnected with this high level. It made it possible for most of the respondents to read posters and leaflet in respect of NPI.

**Table 3 Distribution of Respondents by income level**

<b>Income (₦)</b>	<b>Frequency</b>	<b>Percentage (%)</b>	<b>Cumulative (%)</b>
1,000- 10,000	84	42	42.0
11,000-20,000	49	24.5	66.5
21,000-40,000	37	18.5	85.0
41,000-100,000	24	12.0	97.0
> 100,000	6	3.0	100.0
Total	200	100	-

The monthly income generated by majority of respondents (42%) fall into ₦1,000-₦10,000 income bracket while 24.5% generated income of ₦ 11,000- ₦ 20,000. It is also evident that 18.5% had monthly income of ₦ 21,000- ₦ 40,000. Also, only 3% had monthly income above ₦100, 000. The amount of average monthly income of the respondents was ₦22,095.48. Increase in income is expected to have positive influence in the use of NPI in the study area. This might be due to the fact that mothers with relatively middle or high income would be able to afford the cost of transportation to the immunization centre.

**Table 4 Distribution of respondents by marital status**

<b>Status</b>	<b>Frequency</b>	<b>Percentage (%)</b>	<b>Cumulative (%)</b>
Married	185	92.5	96.5
Divorced	3	1.5	98
Separated	12	6	100
Total	200	200	-

Table 4 above shows the analysis of the marital status of the respondents. It can be seen that 92.5% of the respondents were married, 1.5% were divorced while only six were separated.

The largest percentage of the respondents were married and as such, valid subjects for the study.

**Table 5 Distribution of respondents by Household size**

<b>Family size</b>	<b>Frequency</b>	<b>Percentage (%)</b>	<b>Cumulative (%)</b>
3-4	104	52.0	52.0
5-7	79	39.5	91.5
8-10	15	7.5	99.0
11-13	2	1.0	100.0
Total	200	100	-

Table 5 above shows the household size ranged from 2-13 with an average of 5. Most of the respondents (52%) had family size of 3-4. Family size of 5-7 also accounted for 39.5%. about 7.5% of the respondents resided in household as large as 8-10 persons, very few of them had a family of more than 10.

The increase in household size portends a worsened poverty situation since it impinges adversely on the declining income, feeding ability and living conditions of the household. However, large family size may ensure availability of enough helpers in taking care of young children.

### **Test of hypotheses**

#### **Correlation Result**

Correlation analysis was used to test hypotheses one and two. The results are presented in tables 6 and 7 below

H<sub>01</sub> There is no significant relationship between literacy level of women and participation in immunization.

**Table 6 Correlation between the literacy level of women and participation in immunization**

Variable	N	$\bar{X}$	SD	r	p	Remark
Literacy level of women	200	13.1100	5.3574	0.212	0.003	Significant $p < 0.01$
Participation in immunization	200	5.1950	2.1704			

Table 6 reveals that a significant relationship exists between mother's participation in immunization and their level of education ( $r = 0.212$ ;  $p < 0.01$ ) and as a result, the null hypothesis one which says there is no significant relationship between literacy level of women and their participation in immunization programmes is rejected. The positive relationship shows that with increase in the years of education of mothers, their level of participation in immunization will also increase. The possible reason for this is that more years of education enable mothers to acquire, process and utilise relevant information effectively. It is also an avenue through which knowledge is imparted. Education also helps mothers in objective analysis of problem and the right decision to proffer solution to it. This is not surprising as most of the respondents interviewed explained that they were aware of their children being vulnerable to the childhood killer disease and this has increased their innovation in getting themselves and their children immunized. The data revealed that more than 70% of the mothers interviewed had received tetanus toxoid immunization during pregnancy though they did not complete the five doses but they were immunized at least twice before delivery.

This is not unconnected with high level of literacy and awareness on immunization programme, which has been reported earlier in this study. This is consistent with the findings of Caldwell (1984), Jegede (1995) who reported that educated women were more receptive to Expanded Programme on Immunization than uneducated mothers.

They asserted further that schooling enhances a woman's knowledge of modern health care facility. This increases the value she places on good health results in heightened demand of modern health care services. It has also been widely argued by scholars that education modifies women's beliefs about disease causation and cures which influence domestic health care practices and the use of modern health care services.

One can therefore conclude that, modification of women's beliefs about causes of diseases and cure is a function of the type of health education received. Most educated mothers have access to health magazines and can easily read and comprehend health information through posters and handbills posted around the community.

H<sub>02</sub> There is no significant relationship between age of mothers and Participation in Immunization

**Table 7: Correlation between age of respondents and participation in immunization**

<b>Variable</b>	<b>N</b>	<b><math>\bar{X}</math></b>	<b>SD</b>	<b>r</b>	<b>p</b>	<b>Remark</b>
Age	200	32.72200	7.2244	0.144	0.042	Significant p< 0.05
Participation in immunization	200	5.1950	2.1704			

Table 7 shows that there was a significant relationship between age of respondents and their participation in immunization programme (r = 144, p <0.05%).

This result reveals a low positive correlation between mother's age and their level of participation in immunization. The positive correlation shows that with increase in the age of mothers, their level of participation in immunization also increases. The implication of this is that there is an increase in the use of immunization resource, as the mothers grow old. This is probably due to the fact that as the mothers grow in age they might have gathered information about the importance of immunization based in their past experience through interaction with community health workers. In other words, if the vaccination they had received for their first

child was found effective, they would be encouraged to vaccinate other children they have even as they grow old age.

Another factor that could be responsible for this is the comprehensive programme on immunization embarked upon in the study area. In Abeokuta metropolis, there are functional outreach programmes, which bring the service to the door step of users. This made immunization to be community driven and it encourages both old and young mothers to participate. This could also be attributed to the fact that as mothers advance in age they must have debunked misinformation or fallacies attached to immunization at their early stage of life. For instance, some of the respondents interviewed articulated their fear on whether OPV contains family planning contraceptive.

Although, uninformed individuals, groups, and/or the media who have not received facts about vaccination and campaigns and/or who are critical or suspicious of government run programmes and the public health system, often disseminate these false rumours. This serves as evidence that some mothers will not want to believe immunization at their early stage of child bearing except the right health message is given.

This position is in contrast with the findings of Jegede (1995) who asserted that the higher the age of mothers, the lower the use of EPI.

H<sub>03</sub> There is no significance relationship between income level of women and participation in Immunization.

### **Regression Result**

Regression analysis was undertaken to determine the influence of certain socio economic characteristics on the level of participation in immunization in the study area. The seven factors considered are age, household size, income, distance, occupation, education and prevalence of diseases.

The linear multiple regression result presented in Tables 8a, 8b, and 8c below

**Table 8a: Regression summary of influence of independent variables on participation in immunization**

Multiple R	0.311
R-Square (R <sup>2</sup> )	0.10
Adjusted R-Square (R <sup>2</sup> )	0.064
Standard Error (S.E)	2.0997

**Table 8b: Analysis of Variance**

Source of variation	Sum of square	Df	Mean square	F-ratio	Sig.
Due to regression	90.889	7	12.984	2.945	0.06*
Due to residual	846.506	192			
Total	937.395	199			

\* Significant at 10%

**Table 8c Parameter estimate of the relative contribution of independent variables on participation in immunization**

Variable	Variable description	B	Standard Error	Beta	T-ratio	Sig.
1	Age	0.02331	0.024	0.074	0.942	0.348
2	Household size	0.2446	0.087	0.021	0.283	0.778
3	Income	1.858E-02	0.000	0.187	2.225	0.026*
4	Distance	-0.0335	0.050	-0.093	-1.360	0.175
5	Occupation	-0.334	0.363	-0.077	-0.920	0.358
6	Education	0.0578	0.038	0.143	1.540	0.125
7	Prevalence of disease	-0.310	0.501	-0.043	-0.619	0.537

Table 8a reveals that the coefficient of determination,  $R^2$  is 0.10. this indicates that the independent variables considered accounted for 10% of the participation in immunization while 90% of the participation was explained by other factors such as religion, cultural belief government policy, environmental factors level of awareness, political instability, leadership style, attitude of health officials among others (not included in the regression)

The performance of analysis of variance in table 8b that F-ratio of 2.945 was significant at 0.10 alpha level. This provided the evidence that a combination of all the independent variables had joint impact on the level of participation in immunization.

Table 8c shows the regression coefficient, the standard error of estimate, the t-ratio and the level at which the t-ratio is significant for each independent variable. The table shows that the beta weight ranged from -0.093 to 0.187. Distance (Variable 4) had the least beta coefficient of 0.187.

The beta coefficient shows that out of the seven variables considered the income of respondents was most important. This is followed by age, education, household size, prevalence of disease, occupation and distance in the determination of the level of participation by the respondents.

Also evident from Table 8c is that the values of t-ratios that are associated with each independent variable showed that out of seven independent variables considered only the income of respondents was significant at 0.05 alpha level. The result shows that there is a positive relationship between the level of income of mothers and the level of participation in immunization programme. This implies that with increase in the income level of respondents, the number of time a child is immunized will also increase. The possible reason of this is that with a higher income level, respondents will be able to afford the transportation cost and other cost associated with child immunization.

This is not surprising as many of the respondents interviewed submitted that in view of the high cost of transportation they could not visit health centres regularly to immunize their children.

Though not significant, the signs of the coefficients of distance and education corroborate the findings obtained from correlation analysis. The negative relationship between the distance and the number of times a child is immunized shows that with a kilometre increase in the residence of a respondent will cause the participation level to decrease by 0.33 times. This scenario reveals the difficulties a participant is likely to face if she lives far away from the immunization centre.

However, the participation level will increase if a mother lives very close to the immunization centres. The rationale behind this is the reduction in the transportation cost to the centre in view of the short distance. This position was strongly supported by Okafor (1984) and Eugenia *et al* (1989) who reported that mothers who live close to EPI facilities used it more than those living far away. They further observed that the cost of transport had serious implication on use of health care services.

Similarly, the result shows that with increase in the years of education of respondents the level of participation in immunization will increase. This may be due to increase in the level of awareness on the importance of immunization.

## **Conclusion**

This study examined the influence of literacy level, age and income factors on women participation in National Programme on immunization in Ogun State Nigeria. Descriptive research design was adopted for the study. The population comprised of all women of child bearing age who have given birth to at least a child in the last five years.

The mothers were interviewed and information was collected through the aid of well-structured questionnaire. The data collected were subjected to analysis using descriptive

statistics, correlation and regression analysis. The findings obtained from the study revealed that there is a significant relationship between literacy level of women and their participation in National Programme on Immunization. Similarly, there is a significant relationship between age of women and their participation in immunization programme.

The multiple regression result showed that the level of participation was significantly determined by the income of respondents ( $p < 0.05$ ) The implication of this is that increase in immunization coverage for prevention of childhood killer diseases can therefore be enhanced through improved participation. However, participation can be increased if the policy recommendations are implemented.

### **Recommendations**

1. This study revealed positive contribution of education to community participation in immunization. Therefore, community education on the importance of immunization programme should be given adequate attention.
2. Adult literacy centre should be established by both government and non-governmental organization in order to educate and empower non-literate women in the community
3. Community leaders should help to mobilize their members during national immunization days for effective participation
4. It is evident from the study that income is one of the major determinants of mothers' participation in immunization. Therefore, income generation activities and women empowerment programme should be provided in the study area by both the government and non-governmental organisation. This will increase women's income and their participation in the national programme of immunization.
5. It is equally reported that some villagers were not reached during the last NIDs due to transportation problem. This is not unconnected with the problem of bad road. Efforts should be made by the government to tar or grade the existing rural roads to make them memorable.

Also, vehicles should be provided to convey health workers to rural area during the national immunization days (NIDs). Similarly, immunization units should be established in rural area of the state for routine immunization of their children.

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A Forgotten Master: Louis Spohr.  
The Exciting Research and Publication of his Songs

Music Education

Workshop

Professor Susan Owen-Leinert will present a workshop regarding her exciting research and re-discovery of the complete 105 *Lieder* (art songs for one or two voices with piano accompaniment) by the German romantic composer Louis Spohr (1784-1859), now published in 12 volumes for the first time in a critical edition with detailed prefaces and introductions in both German and English (Dohr Publisher, Cologne). The workshop includes musical examples from CD recordings of famous singers.

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## A Forgotten Master: Louis Spohr. The Exciting Research and Publication of his Songs

The German romantic composer Louis Spohr (1784–1859) forged a significant contribution to the development of the German *Lied* (art song) through his compositions for voice and piano. These contributions to the vocal music of the 19<sup>th</sup> century have until now been largely neglected in music history and by researchers of German *Lied*. The intention to rectify this inadequacy in the study of music history and literature was the main objective of my research. Throughout a time period of more than 50 years Spohr dealt with the art form *Lied*. The result is 105 one and two voiced songs with two- or four-handed piano accompaniments. The research of Louis Spohr's *Lieder* was extremely difficult due to the situation of unclear sources. The traditional preservation of the composer's autographs is incomplete and direct commentaries from Spohr about his *Lieder* are conveyed only in a few cases. The International Louis Spohr Society located in Kassel, Germany lost the largest part of its valuable holdings, systematically gathered since the year 1908, through confiscation in 1933 and one year later the mayor of Kassel ordered that they be destroyed. The distribution of the Spohr inheritance in the year 1860 contributed to the fact that his estate in the truest sense of the phrase was "scattered to the far ends of the earth".

Following the information on each composition found in Folker Göthel's "Thematisch-Bibliographisches Verzeichnis der Werke von Louis Spohr" [trans. *Catalog of the works of Louis Spohr*] it was my goal to find the existing manuscript or first editions of each song, edit the musical and textual inconsistencies and publish them into a collection that would be appropriate for musical study and performance. Quickly realizing that the text authors were sometimes designated as "unknown", the project also included extensive literary investigation.

My research began with finding and collecting originals or copies of all song manuscripts and first editions discovered in the assemblage of private collectors, musical societies and organizations as well as libraries around the world. Remarkably I was able to discover the ten songs that were reported to be lost forever and are now for the first time accessible. Perhaps due to the fact that Spohr's daughter Emilie immigrated to the United States, some rare manuscripts of her father were discovered in libraries in New York and Washington. For the first time in over 170 years the complete songs are presented together in a critical edition published by the Dohr Verlag, Cologne, Germany.

A detailed literary research of poets and texts was necessary due to Louis Spohr's selection of texts for his musical compositions. More interested in the quality of the poem than the author, he sometimes neglected to record the poet's name. This unforeseen additional research project resulted in an amazing literary story of the poets, the historical times and the composer. Many mistakes could be corrected in both the musical notation and the texts by comparing sources. The edition contains an expansive section of critical notes. Every individual song is prefaced with historical facts and interpretive guidance, creating a scholarly as well as artistic advice.

This critical edition of the complete *Lieder* of Louis Spohr has filled an important void in the history of song literature. The study of German *Lied* is now more complete and the performance materials are printed in modern notation and format. First presented at the *Musikmesse* Frankfurt,

the Frankfurt Book Fair and the Leipzig Book Fair, the edition has received positive and enthusiastic reviews. The 12 volume edition has been procured by libraries world-wide on five continents (see: [www.worldcat.org](http://www.worldcat.org)). Several universities and music conservatories in Germany have invited me for master classes concerning the composer Louis Spohr and the performance practice of his *Lieder*. The songs are important for vocal study as they include works of varying levels of difficulty. From simple strophic forms with lyrical melodies to challenging extended song forms with complex chromatic harmonies, the teacher and the singer have a large variety of music to explore. Due to the extensive research conducted for the first academic and critical edition of the complete one and two-voiced *Lieder* of Louis Spohr, many factual errors found in previous Spohr research materials could be corrected. This concerns the history of the works, their dates, and various authors of the *Lieder* texts. Therefore commendable standard works of various authors will have to be revised.

Based on these musical scores, compact disc recordings have been newly released, containing songs and duets never before recorded. Further interest in the vocal music of Louis Spohr has been inspired and more of his choral and operatic works are being performed. Great *Lied* composers such as Robert Schumann, Felix Mendelssohn and Johannes Brahms considered him a master and were influenced by his compositional techniques. During Louis Spohr's lifetime he was greatly appreciated and his music widely performed. He is worthy of our attention today.

The proposed workshop will be an exciting musical journey through the 19<sup>th</sup> century acquainting the audience with the "forgotten master" Louis Spohr.

Susan Owen-Leinert

# A Forgotten Master: Louis Spohr. The Exciting Research and Publication of his Songs

Susan Owen-Leinert

## Supplemental Material



Gesamtausgabe der Klavierlieder  
in zwölf Bänden – Edition Dohr



**Complete Edition of Louis Spohr's *Lieder* in 12 vols.**

**Review of the first complete SPOHR LIED EDITION (12 vols.)  
in the British music magazine THE SINGER June/July 2011**



**"An example of the efforts made to rehabilitate Spohr is a new first scholarly Lied Edition.... more than 100 songs are included... the critical commentary on each number is excellent".**

**Review Neue Musikzeitung 5 / 2012**



**Mit steigender Leidenschaft, wehmütig ...  
Romantische Literatur für Singstimmen und Klavier**

The largest German music magazine, "neue music zeitung" wrote a detailed, positive review in the May, 2012 issue about the first complete Louis Spohr Lied edition.

Johanna Erbacher-Binder describes Spohr's Lied compositions as "magnificent", "versatile" and "rich with ideas". Concerning the edition by Susan Owen-Leinert and Michael Leinert she praises the prefaces, critical report and the detailed commentary (in German and English) as being "very insightful".

Her conclusion: "With this complete edition, the life and work of Louis Spohr receive a new point of interest, a new color."

**Louis Spohr: Complete Lieder for Voice and Piano:  
 volume 3: Op. 101 and Op.105**, for voice and piano (solo and  
 duet), edited by Susan Owen-Leinert and Michael Leinert, published by  
 Verlag Dohr, E.D. 29953 (2011) ISMN M-2020-1953-5 78pp £32.95

Spohr's long life (1784-1859) made him a contemporary of Beethoven, Schubert, Schumann and even the young Wagner. In his lifetime he was certainly very highly regarded, both as a conductor and violinist, and received very positive reviews for many of his songs, but unfortunately this popularity has not been maintained during the intervening centuries. From *Leiderheft* op.25 in 1809 to *Sechs Gesänge* Op. 154 in 1856, Spohr produced over a hundred songs and the editors of this Complete Edition maintain that he 'can be accepted as a path finder for an unmistakable and original type of German Lied style that Robert Schumann, Johannes Brahms and Hugo Wolf further developed'.

Op. 101 is unusual in including three songs with piano duet accompaniment, *Sangeslust*, *Trostlos* and *Gondelfahrt*. Three of the poems of Op. 105, *Der Rosenstrauch* (Ferrand), *Das Ständchen* (Uhland) and *Mädchens Klage* (von Schweizer), are on the theme of early death, perhaps a response to the death of Spohr's youngest daughter in 1838 at the age of 20. The conversation between the mother and her dying child in *Das Ständchen* is reminiscent of that between father and son in Schubert's *Erlkönig*, although here it is the song of angels that the child hears. However, the remaining songs offer appropriate contrast, with lyrical expressiveness in *Die Himmelsbraut* (Kerner), intense passion in *An \*\*\** (Koch), and a simpler strophic response to thoughts of loving, kissing and drinking, in the anonymous final song, *Warum nicht?*

All the notes on the songs are given in English translation, placing poems and poets in their literary context. Here is a rich repertoire resource that is yet to be fully exploited – I do hope that you are tempted!

**DIE TONKUNST · Magazine for classical music and musicology**  
**Franz Liszt Conservatory of Music in Weimar**  
**Musicology Institute at Weimar-Jena**



Enthusiastic review by Ferdinand von Bothmer  
about the SPOHR LIED EDITION in 12 vols.  
April 23, 2013 No. 2 pp. 273 - 275



**Robert Schumann's conclusion from his review in *Neue Zeitschrift für Musik* about Louis Spohr's Symphony No. 7 in C major, Op. 121:**

*Let us follow him in art, in life, in all his striving! [...] May he stand with our greatest Germans as a shining example.*



**Close friends with Louis Spohr:**  
**Robert Schumann, Felix Mendelssohn Bartholdy and Johannes Brahms.**

After 170 years for the first time again in print: Spohr's Lied in a French version.

**AMOUR ET COURAGE.**

Chant d'Emma.



Lith. Magnier.

Dans l'Opéra du partage.

*Paroles françaises de M<sup>r</sup> Bélanger.*

Musique de

**LOUIS SPOHR.**

Paris. Prix 2 Fr.

chez RICHALD Editeur des Mélodies de F. Schubert,  
Beethoven, Weber, Clapison, Coucune, Bordèse, et Thalberg.  
Boulevard Poissonnière N°16 m.l.

The unpublished song WoO 139 *Jüngst hörte ich, welch süßen Lohn* is definitely a version of the Lied WoO 92 *Was treibt den Waidmann in den Wald* (1825), however with a different text and without the obligato Horn part [See also: Dr. Martin Wulfhorst "Identifying Five Spohr Items" Spohr Journal, The Magazin of the Spohr Society of Great Britain XVI Summer 1989 pp. 2 – 6]. Both works are in the key of A-flat major and have the exact same number of measures. Since it is without question a composition from Louis Spohr, and appears also in a new French version (*Amour et courage*, words from Bélanger) published by S. Richault in Paris (1838 - 41?), the Lied WoO 139 will be presented in the complete Owen-Leinert Lied edition [E.D. 29960 Vol. 10 Einzellieder I].

# *The Spohr Society of the United States of America*

Founded in 2008 by Prof. Susan Owen-Leinert & Michael Leinert in Memphis, TN.



**Louis Spohr was a Honorary Member of the Philharmonic Society, New York:**

**"This certifies that Dr. Louis Spohr was elected an Honorary Member of the Philharmonic Society, New York on this Thirty first day of January 1846.**

**Given under our hands and seal this Twenty sixth day of May 1846.**

**Seven signatures (a. o.): Ureli C. Hill, Alfred Boucher, George Loders, H. C. Timm.**

- ▶ **A student of Louis Spohr in Kassel from 1836-38, the American violinist and conductor Ureli Corelli Hill (1802-1875) was the founder and first President of Philharmonic Society, New York, in 1842 (today: the New York Philharmonic Orchestra). Hill invited both Spohr and Mendelssohn to conduct, however neither of them could accept, sending letters of acknowledgement instead. Both were later made honorary members of the Philharmonic.**

[www.owen-leinert.com/Spohr\\_Society.htm](http://www.owen-leinert.com/Spohr_Society.htm)



**Susan Owen-Leinert** joined the University of Memphis, Rudi E. Scheidt School of Music, in 2005 after enjoying over 20 years of performing opera and concert internationally. She made her European debut with an invitation from Maestro Daniel Barenboim to the Staatsoper Unter den Linden in Berlin, where she sang *Senta* (Der Fliegende Holländer) and *Helmwige* (Die Walküre). Ms. Owen has sung major roles in guest engagements at the Deutsche Oper Berlin, Semper Oper Dresden, Deutsche Oper am Rhein and Opéra de Nancy et de Lorraine, France. Her interpretation of the title role of *Elektra* by Richard Strauss was hailed in the press as the "Singer-Discovery of the year 2000", a role she performed at Staatstheater Darmstadt, Aalto Theater Essen, Antikenfestspiele in Trier, Theater Münster and Staatsoper Hannover. As a full-time ensemble

member of Staatstheater Kassel (1995-1999) Ms. Owen sang *Brünnhilde* (Wagner: Der Ring des Nibelungen) with great critical acclaim at Staatstheater Kassel. Complete live recordings of *Die Walküre*, *Siegfried* and *Götterdämmerung* were successfully released on CD by Ars Produktion, Germany. As *Brünnhilde* she was a guest in numerous opera houses in France, Italy and Germany, as well as concert performances in Taipei and Tokyo.

At Staatstheater Darmstadt she was a full-time ensemble member from 1999 – 2002 where she sang major parts in operas by Janacek, Wagner and Strauss. Her career includes many engagements in the USA, for instance with the Palm Beach Opera, the Austin Lyric Opera and with the Opera Orchestra of New York.

Highlights of her performances on the concert stage include the Mahler *8th Symphony* (Soprano 1) at the Beethoven Festival in Bonn and Cologne, *La Terre for soprano, piano and orchestra* by Zygmunt Krauze for Radio France in Paris, Schoenberg's *Gurrelieder* in both Darmstadt and Bratislava, Wagner's *Wesendonck-Lieder* as well as the *Vier letzte Lieder* by Richard Strauss.

Receiving her Bachelor of Music Degree from East Carolina University and her Master of Music Degree from the University of Texas at Austin, Ms. Owen captured the attention of the opera world when she was a winner of the 1990 Metropolitan Opera National Council Auditions and in 1991 the Opera America Award.

Associate Professor of Voice Susan Owen-Leinert (Division Head of Vocal Arts) founded the *Memphis Opera & Song Academy*, a summer academy for opera singers on the verge of international careers. She is the General Manager of The Chamber Opera of Memphis which since 2007 has successfully produced contemporary opera productions such as *The Medium* by Sir Peter Maxwell Davis which was invited to Germany for guest performances. In 2009 Susan Owen-Leinert was the recipient of the *CCFA Dean's Creative Achievement Award*. She has been a guest lecturer, recitalist and given master classes in the United States, Germany and Cyprus.

As the President of the *Louis Spohr Society of the United States*, Ms. Owen-Leinert is the editor of the first critical edition of the complete Lieder by Louis Spohr in 12 volumes with the German Publisher Dohr in Cologne.

[www.owen-leinert.com](http://www.owen-leinert.com)

The Benefits of Standards-Based Grading:  
An Overview and Critical Evaluation of Modern Grading Practices

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### Abstract

This paper explores the methodology and application of standards-based grading practices. In particular, it illustrates the principles and implications of standards-based grading practices in comparison to those of other grading practices commonly employed at the elementary, secondary, and post-secondary levels of education. This paper examines and responds to issues and challenges inherent in modern grading practices, and provides a review of relevant research, literature, and studies in support of standards-based grading practices. This paper places all comparisons and evaluations in the context of Tomlinson and McTighe's 2006 publication, *Integrating Differentiated Instruction and Understanding by Design*, identifying the basic tenets of standards-based grading practices.

*Keywords:* standards-based grading, formative assessment, point-based grading, summative assessment

### The Benefits of Standards-Based Grading:

#### An Overview and Critical Evaluation of Modern Grading Practices

Standards-based grading, also known as formative assessment, is an innovative and highly controversial grading practice gaining momentum at the elementary, secondary, and post-secondary levels of education. The process is most concisely described as a grading system in which students are evaluated based on their proficiency in meeting a clearly-articulated set of course objectives (Tomlinson & McTighe, 2006). Standards-based grading differentiates from traditional point-based grading in that it focuses on larger outcomes; rather than inferring a student's progress based solely on how many points the student has accumulated from attendance, or from the completion of individual assignments, standards-based grading concerns itself with the cohesive body of knowledge that the student gains as a result of the course. It does so by prioritizing the *final result* of the student's participation, instead of relying on a summation of grades awarded at various stages of the student's learning process—an intrinsically flawed method of evaluation which often produces a snapshot inconsistent with the true outcome of the student's efforts in the course.

To truly understand the differences between these two grading practices, it must be noted that standards-based (formative) assessment and points-based (summative) assessment serve two different—and often conflicting—purposes. In his book *How to Grade for Learning, K-12*, teacher and researcher Ken O'Connor (2009) identifies the separate purposes of each method, stating,

It is essential that teachers distinguish clearly between formative and summative assessment...Formative assessment should be used primarily to give feedback to students (and teachers) on the progress of learning, whereas summative assessments are

used to make judgments about the amount of learning and so are included in grades.  
(p. 116).

In short, the former focuses on providing students with feedback, with the expectation of improvement, while the latter is predicated upon judgment of what the student has already managed to achieve. The same concept is illustrated in Figure 1, which depicts the effect of swapping summative for formative assessment; instead of defaulting to previously recorded

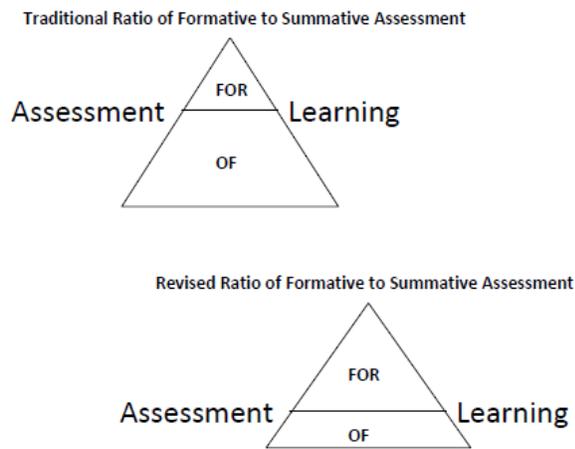


Figure 1: Breakdown of formative vs. summative assessment

a student's ability to meet a clear set of standards, typically designed to reflect thorough, end-of-course comprehension of the subjects taught, standards-based grading not only holds students accountable to their progress, but eliminates the discrepancies implicit in attempting to turn point calculations into an accurate representation of a student's achievements. Thusly, a teacher using a standards-based system of evaluation is better able to determine a student's grade based on the single most important aspect of education—how well the student comprehends the content of the course.

This hotly debated grading practice takes aim both at mediocrity in the classroom and inaccurateness in the gradebook, attempting to reinvigorate elementary, secondary, and post-

<sup>1</sup>Spokane Public Schools, 2009, p. 13

grades, and calculating a final grade from the resulting accumulation of points, formative grading assesses in the *present tense*, seeking to verify not simply that a student has completed a certain amount of assignments, but that a student is armed with the tools necessary to succeed in future assignments. By emphasizing

secondary education by forcing teachers to implement more accurate methods of evaluation—methods that hold students accountable not for earning points, which often do not represent learning achievements so much as students’ ability to follow a set of rules, but for actual mastery of the subjects taught to them. Though applicable to all fields of study, this method of evaluation is particularly relevant to the liberal arts, whose academic objectives lend themselves less to test scores (points) and more to the general betterment of students’ abilities to think and write critically, comprehending and contributing to the world around them in a manner that projects, as the phrase suggests, a measure of “liberation.”

An examination of grading systems used within the field of liberal arts, applied to such disciplines as the study English or writing, reveals that standards-based grading is not merely an improvement upon traditional point-based grading; it is a system entirely fit to replace point-based practices, but that requires of those who use it a keen understanding its methodology, and a commitment to education that transcends and even defies many current expectations set forth by school administrations. With a general emphasis on liberal arts classes, this report will illustrate the benefits of standards-based grading through a review of relevant literature, research, studies, and—perhaps most centrally—actual grading practices employed at the elementary, secondary, and post-secondary levels of education.

### **Literature Review**

In order to truly appreciate the deficiencies of point-based grading, we must understand not only the ways in which standards-based grading is superior to points-based grading, but also what characterizes a “superior” education; we must determine the goal, and evaluate each method of grading based on how well it serves that aim. For the purpose of this study, let us identify and reaffirm the objectives of academic, liberal-arts based education.

**Standards-Based Grading and the Liberal Arts**

In his essay, “Statistics in Liberal Arts Education,” researcher Gudmund R. Iverson (1985) investigates the learning objectives of college-level liberal arts classes, stating that English, in particular, is taught “because training in English enables us to think more critically and to communicate our thoughts,” and continuing on to say that “similar comments can be made about most subjects taught as part of a liberal arts curriculum” (p. 17). Achievement of objectives such as critical thinking and communication necessitates that students are able to apply what they learn in the limited context of the classroom to what they experience in the greater context of the world, a purpose Iverson reaffirms when he states that “after acquiring such a background in the liberal arts, a person’s natural next step is to acquire the necessary skills needed for a profession” (p. 17). This task is naturally obscured by points-based grading, in that there is no clear way to apply the acquisition of points to anything other than a gradebook. A better system would make it a priority to clarify for students the practical correlation between achievements inside and outside of the classroom.

Numerous researchers support the necessity of establishing such connections, such as college English instructors Holly Hassel and Jessica Lourey (2005), who state in their essay, “The Dea(r)th of Student Responsibility,” that “instructors have reason to believe that their students are out of touch with what their grades really symbolize, why they are even in college, and what responsibilities they have as students” (p. 2). Standards-based grading engenders a learning environment prime for clarifying the broader implications of coursework, due to the fact that evaluating student progress by anything other than a pre-established point system requires instructors to interact more closely with students and their work—to engage students in establishing goals, and then help students apply their work to those goals. Under a standards-

based system, teachers must provide detailed and meaningful assessments of student material, thusly affording both student and teacher a chance to work together to demystify learning objectives and establish critical connections.

Iversen (1985) further aligns the study of liberal arts with “higher ideals of human life,” and identifies the content of a well-rounded liberal arts education as “less a list of subjects and more a general learning process that develops a person and makes that person an active, contributing member of society” (p. 17). Given this description, the overarching aim of liberal arts education is to grow and refine students’ capacity for learning, providing them with a base of knowledge by which they might acquire a better understanding of themselves, their peers, and—as previously mentioned—the world beyond the classroom. Moreover, the above description makes clear that providing students with an exemplary liberal arts education does not default to rote instruction of itemized “subjects,” but requires the facilitation of an active and evolving process by which students learn to navigate the intricacies of the society toward which they aspire.

Additionally, let us consider the phrase “higher ideals of human life”; it conjures, in particular, ideas of self-worth and empathy, placing implicit value on the critical, moral and social development of the human mind. For a number of reasons, achievements or deficiencies in such categories cannot responsibly be qualified by an amount (or lack) of points. In order to accurately identify and respond to accomplishments and impediments in a learning process that emphasizes such broad goals as cognitive development, individualized attention must be given to the student in question. His or her particular situation must be acknowledged and dealt with by a teacher who understands the importance of clarifying the larger implications of the student’s progress, lest that student lose sight of the relevance of continuing to make said progress. An

individual grade of 99 out of 100 points fails to reinforce overarching learning objectives as well as a written page of evaluative response, or a personal conference detailing what exactly the student did so well. Similarly, if a teacher hands a student a failing assignment, that student will not know where the need for improvement originates unless the teacher makes an effort to explain the grade, providing the student not only with a clear set of standards to meet, but a plan for meeting that set of standards.

**Benefits of standards-based grading to student-teacher communication.** O'Connor (2009) weighs in on the above line of reasoning, reinforcing that language, rather than numbers, should be the central tenet in student-teacher communications: "The basic principle at work [in standards-based grading] is that words open up communication, whereas numbers close it down—prematurely at that" (p. 123). Premature conclusion of student-teacher dialogues creates gaps in the learning process, making it especially vulnerable to impediment; given that it is the nature of the learning process (and any other process, for that matter), to exist in a constant state of flux, absorbing the features of its environment, it is essential that teachers catch and correct problems before they are manifest. Progress must be monitored outside the parameters of points-assignment, in order that deficiencies and successes are not overlooked, having been inaccurately transfigured by numbers in a gradebook. Teachers cannot achieve this without transcending the comfortable distances of points-based assessment, into the sometimes uncomfortable realm of communicating with students directly and often about the particulars of their academic circumstances.

### **Analysis of Practice**

An examination of any class in which a typical point-based grading system is used reveals a notable discord between intended and actual learning outcomes; despite that the

addition and subtraction of points is meant to reward or penalize students for the quality of their performance in a class, theoretically making them more accountable to their academic responsibilities, students whose progress is evaluated on a point scale tend *not* to develop the same sense of personal responsibility toward their work as their formatively evaluated peers. This is due to the fact that points, especially when awarded for achievements that do not directly reinforce overarching learning objectives, such as attendance and extra-credit, have the ability to mask learning deficiencies. This deflects attention from potential learning impediments, making it difficult both for students to engage with course material, and for instructors to identify and meet student needs. In the following excerpt from her article, “Seven Reasons for Standards-Based Grading,” high school teacher Patricia Scriffiny (2008) attests to the ability of point-based grades to mask actual levels of comprehension, obscuring the learning process:

I once thought it was essential to award points to students simply for completing homework. I didn't believe students would do homework unless it was graded. And yet, students who were clearly learning sometimes earned low grades because of missing work. Conversely, some students actually learned very little, but were good at “playing school.” Despite dismal test scores, these students earned decent grades by turning in homework and doing extra credit. (p. 71)

Scriffiny's testament raises several key problems associated with point-based grading, the first being that awarding points “simply for completing homework” is a prime way to engender student laziness. In an environment that prioritizes points, students are quick to identify and isolate easy methods of attaining those points, regardless of whether or not the activities they complete to get them are actually beneficial to the learning process. This has the practical effect of replacing cognitive learning goals with the acquisition of points, as an assignment completed

strictly for the purpose of attaining points is an assignment lost to all broader course objectives. It is alienating to the student in that it separates successful grades from successful learning, and alienating to the instructor in that it never provides a truly accurate representation of how successful his or her teaching methods are.

The passage also makes apparent that a points-based grading system encourages a formulaic disregard of learning objectives. Sciffiny's experience showcases the detriment of consistently awarding points to students whose work is *less* than satisfactory, but is completed and turned in on time. Such a practice not only prioritizes the acquisition of points more than it does the comprehension of material, but it also suggests to the students that the *constancy* of their work is more important than the *quality* of their work. As researcher Charles Martell (1974) explains, "Predictability in academic performance is rewarded. What then do we have? A social institution that has substituted means for ends. Grades are paramount, and education is only secondary" (p. 113). When points are awarded simply for turning assignments in on a regular basis, even if the work does *not* reflect actual completion of learning objectives, students forget that the learning objectives even exist, focusing instead on meeting the rote requirements of a system that is guaranteed to issue points in exchange for compliance.

Allowing points to dominate the learning environment stymies academic development in other, more insidious ways, as well, such as by allowing for the development of inaccurate trends in the gradebook. Sciffiny's aforementioned testament describes a situation in which, under a point-based system, subpar students were able to earn decent grades simply by turning in work on a regular basis, while students who were "clearly learning" were so heavily penalized for missing work as to negate the merits of their actually comprehending the material. Figure 2 illustrates a comparison between point-based (traditional) grading and standards-based grading

Traditional Grade Book			
Name	Homework Average	Quiz 1	Chapter 1 Test
John	90	65	70
Bill	50	75	78
Susan	110	50	62
Felicia	10	90	85
Amanda	95	100	90

Standards-Based Grade Book			
Name	Objective 1: Write an alternate ending for a story	Objective 2: Identify the elements of a story	Objective 3: Compare and contrast two stories
John	Partially proficient	Proficient	Partially proficient
Bill	Proficient	Proficient	Partially proficient
Susan	Partially proficient	Partially proficient	Partially proficient
Felicia	Advanced	Proficient	Proficient
Amanda	Partially proficient	Advanced	Proficient

that speaks to this issue, highlighting the inconsistency of point-based grades. Susan may have a higher homework average than her peers, due to consistently completing and turning in homework assignments, but her quiz and tests scores are substantially lower than her peers, suggesting that she lacks fundamental comprehension of course

Figure 2: Traditional vs. standards-based grade book <sup>1</sup>

material. Conversely, Felicia may have a low homework average, but her test scores reflect that she comprehends the material. Despite this, Susan’s earned points will amount to more than Felicia’s, resulting in a higher final grade. Any grading-system that allows for this kind of contradiction has failed the test of integrity. If a grading system is unable to determine a failed from a successful learning objective, it is in need of substantial and immediate revision.

Another issue Scriffiny (2008) raises is that of student motivation, admitting that she was compelled to assign a point value to every piece of homework out of fear that students would not otherwise complete the assignments. Her fear illustrates that she was aware her students had succumb to equating academic progress solely with the acquisition of points, and that a change was necessary in order to reprioritize the achievement of learning objectives. After adapting a standards-based system in which points were replaced with “systematic and extensive feedback on assignments,” Scriffiny (2008) noted no decrease in homework completion rates, and an *increase* in students’ overall comprehension of subject matter (p. 72). Conclusively, offering students feedback in place of points is an effective way to emphasize “that they can and should

<sup>1</sup>Scriffiny, 2008, p. 72

do homework as practice,” and that learning is more important than receiving points (Scriffiny, 72).

Scriffiny’s decision to depart from a point-based grading system is a model for other teachers struggling to reconcile performance and grades. Once it is understood that points neither reflect comprehension nor encourage students to learn, an instructor may lessen his or her reliance upon them, and focus that attention on means of evaluation more helpful to the student (and more likely to produce the kinds of results the instructor desires to see).

### **Application of Research**

I received encouraging results after testing this methodology on students in my own college level basic composition class. Like Scriffiny, I once believed that awarding points for individual homework assignments was the only way to bait my students into completing the work. Moreover, I relied upon those points—almost exclusively—to track student progress between major projects. The practice provided me with a level of structure that was downright comforting. It was so *easy* to check off assignments, record points, and total grades: five points here for a worksheet, ten points there for a reading log. I told myself that providing my students with such a surplus of opportunities to earn points was a benefit to them; if they failed in spite of my efforts, it was because they weren’t trying hard enough. When a student received an especially poor grade at midterm or the end of the semester, I would stew over it, revisit that student’s assignments, and re-tally the earned points with a generous eye—and when the grade ultimately remained the same, I would conclude once more that the onus was, and had always been on the student, to provide me with higher quality work. I had done my part.

This practice, however, though functionally sound, soon revealed itself not to be the neatly-wrapped, multipurpose solution I had taken it for. The periodic teacher evaluations I had

my students anonymously complete started to reflect sentiments along the lines of, “Great class—but the homework assignments don’t really do anything for me,” and more specific feedback, such as “I would rather focus my attention on the larger projects than waste time on all these homework assignments.” Initially, I was taken aback by their comments. I had carefully designed nearly every homework assignment either to reinforce comprehension of important material, or prepare students for larger projects—projects accounting for substantial portions of their final grades. Surely, their inability to glean valuable knowledge from my carefully constructed homework assignments originated in laziness.

The following semester, in spite of my reservations, I decided to try something different. I provided this new group of students with the exact same homework assignments, but absent the point-rewards. I still took note of whether or not students were turning in their assignments, but I no longer attached any numerical value to the work. Instead, I facilitated an alternative system of evaluation, aimed at ramping up levels of communication between myself and my students. I provided students whose work ranged from satisfactory to excellent with written feedback, explaining what was working well, and what could still use some improvement. I required the few students whose work was consistently subpar—or simply missing—to attend individual conferences with me, so that we could identify and work through learning issues together. Above all, I emphasized overarching learning objectives, painstakingly reiterating that while individual homework assignments were not graded, ability to demonstrate proficient comprehension of course material by the end of the semester *was*.

These changes were inspired by a line of thinking suggesting that in order to achieve comprehensive learning in the classroom, a teacher must help his or her students understand that learning is not at full potential *unless* it is comprehensive. Subsequently, a teacher cannot hope to

grade comprehensive learning with any amount of accuracy by using a system that is not itself comprehensive—that does not respond to multiple facets of the student’s learning experience.

Robert J. Marzano (2010), a highly respected researcher in the field of standards-based grading, uses the following analogy to help us understand the concept:

“Think of a baseball card—when you looked at Mickey Mantle’s card, it didn’t say an A on the back. It included his fielding average, hitting average, homeruns—then you know why he’s a good player. Why would we give a student just one grade? (“Bangor Township”)

I stopped using points to grade my students’ homework assignments because points prevented me from looking deeper—from determining my students’ learning profiles, and responding to them with individualized attention. Additionally, the points appeared to be alienating my students from the actual content of the homework assignments; points were taking precedence over comprehension of the material, and therefore disrupting the coherence of the learning objectives I had set for the class.

## **Results**

The improvements I saw upon applying standards-based principles to my formerly uninspiring homework assignments were immediate and invigorating. The practical effect of eliminating the point distraction was that students began to regard the homework assignments as what they actually were: learning tools, meant to serve the practical purpose of helping them achieve a standard. Once the assignments stopped representing points and started representing attainable knowledge, they became not only relevant, but necessary. Students were quick to figure out that lack of attention to individual homework assignments typically resulted in a knowledge and skill deficit that prevented them from excelling at larger, more comprehensive

assignments, such as essays and presentations. Not wanting to disadvantage themselves, and without the cushion of knowing that a missed homework assignment could simply be absorbed and forgotten in the course of points acquisition, students completed and turned in homework assignments at high rates, with seemingly much clearer an understanding as to the purpose of the assignments.

### **Model Example of Standards-Based Grading**

The brand of standards-based grading illustrated above repurposes existing activities so that they better reinforce learning objectives, and does so in part by eliminating distractions. Conventions that are clearly disconnected from broader goals, and that dilute the learning experience—such as point-incentives—are subtracted from the learning environment, clearing the way for standards to be met. Exemplifying this methodology at the elementary and secondary levels is the district known as Spokane Public Schools (SPS), which now restricts all grading criteria to categories that are directly relevant to academic success. SPS explains, in a purpose statement meant to orient teachers unfamiliar with the standards-based system, that “when we include things like effort, participation, or adherence to school rules in grades, grades are essentially broken” (“A Teacher’s Guide,” 2009, p. 4). This statement highlights that if grades are indeed meant to reflect *academic* progress, academic standards must be the *only* standards upon which the grades are based.

### **Common Concerns**

There is a complication, however, in adapting this system at the elementary and secondary levels of education; a parental and societal expectation exists that schools monitor and encourage adolescents’ social and work habits in conjunction with their academic progress. Anticipating this concern, SPS recommends that teachers continue monitoring students’

nonacademic development, but that they report it separately from students’ grades, in a manner that does not interfere with academic assessments (“A Teacher’s Guide,” 2009, p. 8).

WORK HABITS & SOCIAL DEVELOPMENT CRITERIA						
3 - Consistently 2 - Sometimes			1 - Rarely X - Not Graded At This Time			
<b>Social Development</b>			<b>Work Habits</b>			
• Follows school and classroom rules			Participation That Promotes Learning			
• Accepts responsibility for actions			• Conversation & behavior are focused on task			
• Solves problems in positive ways			• Works cooperatively			
• Responds appropriately to adults & students			• Follows directions			
			• Engages in classroom activity			
			• Seeks assistance when needed			
			Completes Assignments			
			• Turns in work on time			
			• Quality work			
			Reading			
			Writing			
			Math			
			Science			
			Social Studies			
			Fitness and Health			
			Library			
			Music			

Figure 3,

White - School Copy; Canary - Parent Copy, 3rd Trimester;  
Pink - Parent Copy, 2nd Trimester; Gold - Parent Copy, 1st Trimester  
Revised 9/11

Figure 3: Example of nonacademic development report <sup>1</sup>

3, excerpted

from SPS’ grading handbook, models a section of gradebook dedicated entirely to the reporting of nonacademic development, and that does not intersect at any point with the reporting of academic grades. This too is a standards-based system; work habits and social development are each assigned their own set of criteria, and a student’s progress in achieving these criteria is reported according to levels of satisfaction, as either a “one,” “two,” or “three.” This is a clean, effective way for elementary and secondary school teachers to continue reporting important nonacademic developments without skewing academic standards, and therefore distorting academic grades.

**Evaluation criteria.** SPS also acknowledges that in order to successfully operate and maintain a standards-based grading system, there must exist an exceptionally clear model of criteria by which to evaluate students’ academic advancements within that system. Attention to

<sup>1</sup> Spokane Public Schools, 2009, p. 10

criteria, after all, is what separates standards-based grading from other forms of grading; criteria are what help teachers determine whether or not standards are being met. Because there is often no practical definition or application of statewide academic standards, which tend to be unduly reliant upon point-based test scores, many forward-thinking districts and

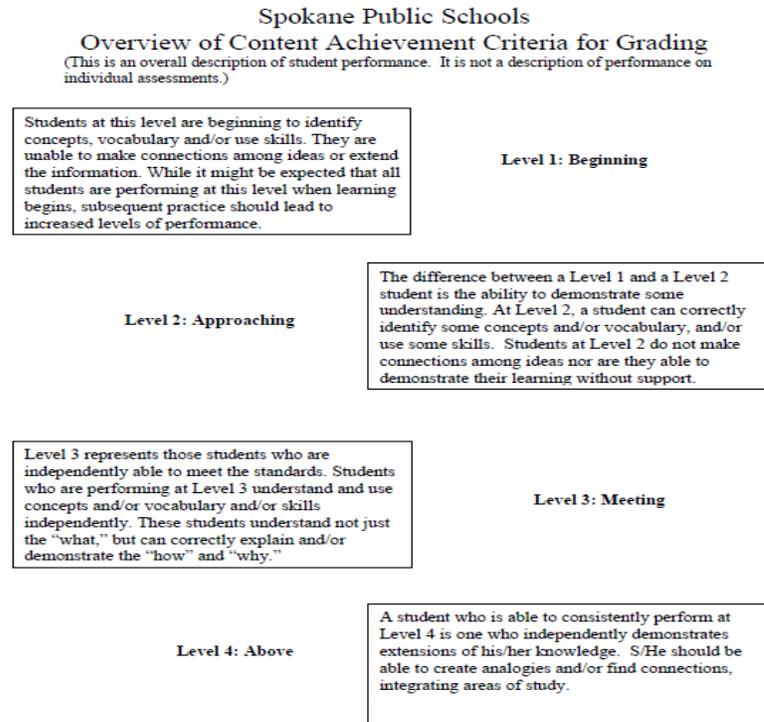


Figure 4: Model set of standards <sup>1</sup>

institutions find themselves in the position of needing to establish and implement: first, their own set of standards, and second, their own criteria by which to measure how well their students achieve those standards. SPS and other likeminded education providers take noteworthy initiative in forging their own district- or institution-wide standards and criteria.

Figure 4, an additional excerpt from SPS’ grading handbook, illustrates a model set of standards. Academic proficiency is broken down into four different levels, reflecting standards of achievement at various stages of the learning process. The headings corresponding to each level— “Beginning,” “Approaching,” “Meeting,” and “Above”—refer to a student’s progress in relation to the end-of-course standard, which is described in Level 3 (“Meeting”). The availability of such a rubric lends essential clarity to the process of standards-based grading.

The absence of a widely-implemented set of grading criteria, such as the one shown in Figure 4, can lead to serious inconsistencies in the way individual teachers within an institution

<sup>1</sup> Spokane Public Schools, 2009, p. 8

or district evaluate and grade their students. Researchers Robert J. Marzano and John S. Kendall (1996) warn that inconsistency in grading standards can engender “a situation in which grades given by one teacher might mean something entirely different from grades given by another teacher even though the teachers are presiding over two identical classes”—a discrepancy undesirable in any education system that strives to cultivate the same levels of academic success in each member of its student body (p. 10). Such discrepancies only result when, in the absence of a universal set of standards, teachers *improvise* by creating their own grading criteria; one teacher might prioritize attendance and classroom participation, while another is more concerned with quality of homework. Each teacher places more importance—typically expressed in amounts of available points—on his or her preferred category, and grades accordingly. Such individually crafted standards disservice students in that they are applicable only in the limited context of that particular teacher’s class. In the eyes of the student, the purposes of these standards may be a complete mystery outside of the teacher’s classroom.

Mysteries in the evaluation rubric, resulting in questionable grading practices, critically disadvantage any student, parent, administrator, or government representative attempting to navigate the education system. In his book, *Making Standards Work: How to Implement Standards-Based Assessments in the Classroom*, Douglas B. Reeves (2004) discusses this issue:

"Whether Congress and state legislatures are analyzing the performance of millions of students or a third-grade teacher is evaluating the work of a single child, the principle of fairness demands that the definition of success be clear. Student achievement in a fair system stems from meeting a standard rather than wading through mysterious and changing expectations." (p. xiv)

The operative word in the above passage is “fair.” Attempting to facilitate a class in the absence

of standards and criteria is tantamount to professional recklessness. Variant grading criteria not only confuse and hinder students, but also impede any attempt to determine the strengths and weaknesses of a student body as a whole, as they allow no reliable frame of reference by which to evaluate success. Conclusively, a clear set of standards is necessary in guiding both students *and* teachers toward desirable educational outcomes.

**Countering the teacher-centered classroom.** Additionally, standards-based grading helps ensure that a class does not become disproportionately teacher-centered. Teacher-centered learning has, until recently, largely dominated classroom settings. Traditionally, teachers conduct classes from a position of power, functioning as distributors of information rather than as facilitators of learning. Teachers are the core around which the classroom orbits; they set the rules, administer the course content, and ensure that the rules are not broken during students' acquisition of the course content. In theory, this approach to teaching provides students with the structure and direction necessary for effective learning. In practice, however, this type of environment may stifle otherwise motivated learners, in that it prevents them from moving out from beneath the teacher's wing. Charles Martell (1974) discusses the paradox:

“The teacher's power to influence the direction and possible outcome of a student's future has an impact at once reassuring and forbidding. Constant reinforcement of the teacher's importance leads, more often than not, to an unquestioning attitude on the part of the student.” (p. 112)

As teachers, we should want our students to question. Valuable learning experiences often begin with questions. Confusion is clarified via questions. And, perhaps most relevant to this essay, connections between coursework and learning objectives are made via dialogues initiated by questions. When the teacher is installed as an authoritarian figure, he or she essentially takes the

place of a parent or guardian, and it becomes difficult for a student to question information issued from that authority. If teachers want students to take responsibility for themselves not just as students of a particular class, but as *learners*, developing learning strategies that will serve them both inside and outside the classroom, we must provide for the asking and answering of questions—some of which may even challenge us, and our teaching habits, in unanticipated ways.

In order to more fully understand the negative implications of exclusively teacher-centered learning, and the ways in which standards-based systems mitigate these effects, let us further examine common

<b>Comparison of Teacher-centered and Learner-centered paradigms</b> <small>(Learner-Centered Assessment on College Campuses by Huba and Freed 2000)</small>	
<b>Teacher-Centered Paradigm</b>	<b>Learner-Centered Paradigm</b>
Knowledge is transmitted from professor to students	Students construct knowledge through gathering and synthesizing information and integrating it with the general skills of inquiry, communication, critical thinking, problem solving and so on
Students passively receive information	Students are actively involved
Emphasis is on acquisition of knowledge outside the context in which it will be used	Emphasis is on using and communicating knowledge effectively to address enduring and emerging issues and problems in real-life contexts
Professor's role is to be primary information giver and primary evaluator	Professor's role is to coach and facilitate Professor and students evaluate learning together
Teaching and assessing are separate	<b>Teaching and assessing are intertwined</b>
Assessment is used to monitor learning	<b>Assessment is used to promote and diagnose learning</b>
Emphasis is on right answers	Emphasis is on generating better questions and learning from errors
Desired learning is assessed indirectly through the use of objectively scored tests	<b>Desired learning is assessed directly through papers, projects, performances, portfolios, and the like</b>

Figure 5 <sup>1</sup>

components of the teacher-centered approach. In her essay, “Teacher-Centered versus Student-Centered: Balancing Constraint and Theory in the Composition Classroom,” researcher and English teacher Donna J. Kain (2003) discusses the methodology behind the practice, stating, “Most critically, in teacher-centered approaches, judgments about appropriate areas and methods of inquiry, legitimacy of information, and what constitutes knowledge rest with the teacher” (p. 104). The central flaw of this design is that it fails to cast the student as an active participant in

<sup>1</sup>Huba & Freed, 2000, p. 98

the development of his or her own education; the student exists in the classroom setting as an *observer* of the teacher's knowledge, confined to the peripheries of the learning experience.

Given the evidence suggesting that teacher-centered learning is deeply flawed, we must ask ourselves: Why is it still practiced by an overwhelming majority of education providers? The answer is that the most popular antidote to teacher-centered learning—student-centered learning—is not without flaws of its own. Kain (2003) describes this alternative in relation to the highly-prescriptive teacher-centered approach: “By contrast, student-centered approaches derive from constructivist views of education, in which the construction of knowledge is shared and learning is achieved through students’ engagement with activities in which they are invested” (p. 104). Superficially, the above philosophy appears to solve many of the issues associated with teacher-centered learning. It involves students in the learning process through sharing of knowledge, rather than administration of information; and participation in activities, rather than subjection to long-winded lecture. It redistributes unequal power dynamics, encouraging teachers and students each to take a similar stake in classroom productivity. It lacks, however, the highly-defined set of standards afforded by teacher-centered learning, which, in its rigidity, succeeds at least in providing students with clear expectations (however arbitrary those expectations may be).

The question then becomes, “How can a teacher combine the clear expectations of teacher-centered learning with the interactive and accommodating nature of student-centered learning?” The answer is to apply the principles of standards-based grading to the model of a student-centered learning environment, thereby creating an environment in which standards are well-defined, students are engaged, and the teacher is accessible. These respective methods of evaluation and instruction not only complement each other, but are in certain ways reliant upon

each other. An activity conducted in the philosophy of student-centered learning may lack direction if it is not designed to reinforce a particular standard; similarly, a standard may present itself as arbitrary if its achievement is not facilitated through engaging activities and lively dialogues. Ideally, students should neither be shut out of their own education, helpless to influence the content or course of the experience, nor should they be without guidance, and a set of objectives to reference in moments of uncertainty. Using standards-based grading practices to evaluate progress within a student-centered learning environment helps teachers achieve this ideal.

### **Conclusion**

In conclusion, modern grading practices are rife with complexity and contradiction. They are remnants of archaic conventions, and hybrids of newer methodologies not yet tried by time and application. They are student or teacher oriented, inaccessibly rigid or unhelpfully absent of structure and definition. Amid these distinctions, point-based grading reveals itself as an objective failure, insufficient in meeting the needs of any student focused on attaining a comprehensive, impactful education, and any teacher concerned with identifying and meeting the needs of his or her students.

The most effective teaching and grading methodologies refrain from extremes, combining useful features from a number of partially-successful practices, in order to create a premium system of education capable of adapting to the requirements of those who use it. Standards-based grading emerges from the study of these methodologies as a system worth advocating; neither intransigent nor unstructured, it accommodates different learning styles, sets attainable goals, and provides teachers with the opportunity to meet students wherever they are in the process of achieving those goals. Perhaps most importantly, standards-based grading

separates and elevates the advent of learning from points and numbers in a gradebook, lending new inspiration to the ages-old pursuit of education.

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EXPLORING THE READING ACHIEVEMENT OF ENGLISH  
LANGUAGE LEARNERS WHO PARTICIPATED IN THE  
RESPONSE TO INTERVENTION MODEL

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## **ABSTRACT**

The purpose of this study was to determine if English Language Learner (ELL) reading achievement scores could be related to the group's participation in Response to Intervention (RTI). RTI addresses the challenges many public schools face as they seek the best methods for teaching reading and language while facing a nationally significant growth in the population of ELLs. The results of this study indicated that RTI was a beneficial practice for ELLs since there was a significant relationship between participation in RTI and reading achievement.

**Key Words:** *English Language Learners (ELLs); Response to Intervention (RTI); California Standardized Test (CST)*

The reauthorization of the Individuals with Disabilities Education Act (IDEA, 2004) and the No Child Left Behind Act (NCLB) of 2001 made the Response to Intervention (RTI) process a widely used model in schools around the country. As an alternative to the IQ-achievement discrepancy determination of identifying students with specific learning disabilities, IDEA specifies that local governments may use a process that determines if a child responds to scientific, research-based intervention as part of an evaluation procedure. “Both IDEA and NCLB call for improving the outcomes for all students by using scientifically based instructional practice” (Cummings, Atkins, Allison & Cole, 2008, p. 24). The processes of identifying students in need of special services through RTI requires a paradigm shift as schools examine contextual issues of quality of instruction and shift focus from identifying students with deficits to identifying students at risk (Ardoin, Witt, Connell, & Koenig, 2005).

The availability of special education services and language support instruction in public schools has been reduced, which has increased the demand for schools to transition ELLs to primarily unsupported English language instructional programs as quickly as possible. RTI was presented to teachers as an alternative to the “wait to fail” model for special education that requires a discrepancy to exist between student achievement and potential. The RTI model allowed schools to address the problems of disproportionate numbers of children qualifying for special education that is, ELLs were overrepresented in special education with fewer classrooms in which large numbers of students could be serviced. RTI addresses the challenges many public schools face as they seek the best methods for teaching reading and language while facing the national significant growth in the ELL population. The intent of RTI is for general education teachers to service students with special needs within the general education classroom without referring them to special education. RTI is used for entire classes of students or school

populations. Rather than benefitting only students with special needs within a classroom or school, RTI addresses the reading intervention needs of all students.

Many ELLs are placed in special education settings due to their lack of the English language skills, especially in places where the quantity of non-English speakers is very limited (Orosco & Klinger, 2010). In this context especially, RTI plays an important role in reducing the number of individuals in populations that are over represented in special education. IDEA 2004 emphasizes that the disproportionate number of culturally and linguistically diverse students in special education has to be diminished (McMaster, Kun, Han, & Cao, 2008).

One of the most difficult tasks in assessing ELLs who are having academic difficulties is identifying the cause of the difficulties. The problem could be English proficiency or an unidentified learning disability. The RTI model provides an additional source of information during the special education referral process, using data with scientifically based instruction. RTI has also set procedures in place to assist schools in identifying students who truly need special education services and distinguishing between the needs of the student with special needs and the needs of an ELL (Rinaldi & Samson, 2008).

Mellard (2004) of the National Research Center on Learning Disabilities states that “RTI is a valuable model for schools because of its hypothesized utility in identifying students with [learning disabilities] and preventing academic failure among all students” (p. 1). The process of RTI hopes to prevent academic failure among all students by providing a close match of students’ current skills and ability levels with the instructional and curricular materials provided in the classroom (Mellard, 2004). Students who do not learn at the same rate as their peers and do not demonstrate commensurate growth through standardized test scores are identified and provided appropriately tailored intervention instruction. “Identifying students who are not

achieving at the same level and rate as their peers and providing appropriate interventions are two features that RTI advocates emphasize” (p.1). RTI emphasizes strong core curriculum and intervention for all students. To be successful, the model should be formally in place throughout a school (Berkeley, Bender, Gregg, Saunders, & Saunders, 2009). Formal implementation of the RTI model ensures that components of the RTI model can be implemented with fidelity, rigor can be built within instruction, and student achievement can be monitored in a standardized fashion.

Within the general population of a school, there are ELLs, gifted students, and students who perform proficiently. While RTI is generally thought to address the needs of at-risk readers, there has been little research on its effectiveness for ELLs (Brown & Doolittle, 2008; Newman Jacobs, 2009). Currently, ELLs are grouped with English Only (EO) students in reading intervention groups and, as such, have not been studied separately. Additionally, after ELL students have taken the California English Language Development Test (CELDT) and qualified for designation, as Re-designated Fluent English Proficient (RFEP) students they are categorized as proficient English language students. Students with RFEP designations are included in the ELL subgroup for CST scores until the RFEP student demonstrates proficiency three times after being reclassified. When data are disaggregated, new RFEPs are considered part of the ELL population. This study included RFEPs as part of the ELL population. Because the guidelines for RTI implementation are broad, school districts have a great deal of freedom with which to interpret the relevance for at-risk readers (Orosco, 2008).

Healy, Vanderwood, and Edlston (2005) assumed that students benefit from the structured intensive instruction provided by the RTI model. Therefore, it is important to determine whether an ELL benefits from an English phonological awareness intervention. It is

also instrumental in understanding ELL reading achievement to know whether determining the students' assessment scores facilitates the identification of those students most in need of additional services. Lack of response to a high-quality intervention is intended to provide the individual educational plan (IEP) team with data indicating whether the student may have a disability and, if need is established, is eligible for special education.

RTI was implemented in response to the disparity in achievement between students who do and do not need accommodations or modifications (Lovett et al., 2008). Research on RTI implementation in public schools has generally focused on the achievement of students with special needs in the general education classroom (Newman Jacobs, 2009; Siegel, 2009). It is important that teachers understand how implementation of the RTI model affects ELLs since language and reading needs present a unique instructional challenge within the RTI model. This understanding of ELLs in RTI necessitates further research, as there is a gap in current research literature. Further, school leaders need more information regarding how curricular changes such as RTI affect the educational experience for ELLs.

The design of intervention for ELLs in RTI unifies the use of best teaching practices while considering language acquisition and knowledge as it relates to reading acquisition and skill (Lovett et al., 2008). Researchers found that ELLs and other struggling readers demonstrated a correlation between oral language delay and reading difficulty (Lovett et al., 2008). The language difficulty often demonstrated by ELLs during the early years of English language acquisition was not a sufficient predictor for reading difficulty. The language acquisition rate of struggling students was addressed through the RTI model with small-group phonics and language instruction.

Since the authorization of NCLB many schools have adopted the RTI model as it measures students' need in relation to performance relative to quality instruction and valid assessment rather than the previously and widely accepted deficit model used in the past for special education consideration. Schools with high percentages of ELLs must begin with an examination of the teaching practices used for the population and the history of results gathered for the EL population from past intervention methods. Valid assessment is critical in evaluating successful RTI implementation for ELLs (Orosco & Klingner, 2010). Previous studies examining intervention models for ELLs have had high degrees of researcher control; therefore, district monitoring of EL progress is necessary in order to determine the effectiveness of RTI implementation.

Rinaldi and Samson (2008) speak specifically to the misidentification of many ELLs as either struggling readers or students with special needs and how this has affected achievement results in reading for the ELL populations participating in reading interventions. Since RTI is an alternative intervention intended to move away from the previously used discrepancy model for special education identification, screening and monitoring of ELLs' participation in RTI must also reflect the alternative nature of the intervention.

Currently, most standardized assessments do not measure reading achievement until the end of second grade. By this time, two or three years of reading instruction have passed before standardized indicators reveal that a student is in need of remediation. It is the unique reading instruction needs of the ELL that fit within structured alternative intervention models such as RTI (Fien et al., 2011). For ELLs, their dependence on effective and differentiated instruction is key to understanding their success in relation to reading acquisition. In order to measure the effectiveness of reading instruction by measuring student-reading achievement within the

alternative model (RTI), assessments must also employ an alternative to traditional methods. With proper assessment tools, the RTI model allows for the placement and monitoring of ELL progress as well as instructional practices. Monitoring progress and practice allows for student response to drive reform within an intervention model; nevertheless, how the monitoring is utilized is highly dependent upon the experience and leadership of school personnel.

Approximately 50% of teachers in the United States with one or more ELLs in their classrooms do not have the proper certification to teach ELLs (Brown & Doolittle, 2008). This is problematic when considering teacher certification in relation to the research on ELLs and reading acquisition. Factors such as teacher fidelity to research-based teaching practices and the use of foundationally sound cultural and linguistic practices in RTI instruction are necessary for effective reading instruction for ELLs. Haager, Calhoon and Linan-Thompson (2007) assert that ELLs respond best to direct reading instruction. Haager et al. (2007) discuss the success of ELLs who participated in additional balanced literacy activities within the RTI intervention model. English Language Learners who consistently participated in multiple tiers of RTI had greater reading success and lower rates of referral to special education.

RTI is composed of results-oriented assessments that are systematic and repeating. In order to properly assess the effectiveness of something as multidimensional as reading achievement, a school must use multiple measures to assess the efficiency with which they reach their ELLs and under-performing students. In addition to the instructional and assessment consideration outlined above, consideration must also be given to elements of the RTI model that can assist all struggling readers, including ELLs and under-performing readers. Research indicates that with effective instructional practices and early, targeted assessment, RTI is a successful reading intervention for ELLs (Brown & Doolittle, 2008). When ELLs receive

support, as well as intensive small-group support, that incorporates best practices, language support, and remediation, their reading success is greater than if they had received instruction within the regular education classroom in the way a non-ELL would. In a synthesis of reading and special education research that spans 20 years, Wanzek, Wexler, Vaughn, & Ciullo (2010) assert that reading instruction for at-risk and struggling readers must incorporate foundational skills as well as higher level reading tasks while focusing on vocabulary and reading comprehension. In order for the kind of instruction Wanzek et al. (2010) suggests taking place, a school would need to adopt an instructional model like RTI in order to accommodate regular and specialized instruction.

Adjustments to the typical teaching model have proven successful in addressing the unique needs not only of ELLs but also of all struggling readers. Teaching practices have changed with RTI implementation. McMaster et al. (2008) assert that the identification model and teaching found in the RTI model offer little difference from the old model of identification and remediation, since RTI instruction is heavily dependent on quality instruction by teachers who understand the reading needs of ELLs and at-risk students. Students are no longer separated because of language ability issues that arise during reading instruction. Therefore, RTI has eliminated a school cultural factor of reading shame since the model incorporates all students within a school into the RTI intervention model. This inclusion results in an enhancement of teacher skills in reading instruction. As a result of RTI, teachers deliver a greater amount of scientifically-based reading instruction that addresses the specific needs of the population they serve (Xu & Drame, 2008).

The purpose of this study was to examine the relationship between RTI and the reading acquisition of ELLs. Specifically, this study examined RTI and its effectiveness and

appropriateness for ELLs in a general classroom setting. In addition, this study examined teacher pre-service programs in relation to how teachers are prepared to meet the needs of ELLs in settings where targeted reading instruction is expected. By examining the RTI model used as a means to remediate lower achieving readers of all language designations, this study explored the possible relationships between the rate at which ELLs acquire grade-level reading skills and their participation in RTI. Schools typically implement RTI to address the needs of learners with special needs falling within the special education categories; however, this study considered the ELL population of a school district as an independent population requiring special support for reading instruction (Fien et al., 2011; Haager, 2007). The research questions that this study investigated are:

1. What is the relationship between RTI and ELL reading achievement scores?
2. What are the differences in reading progress for ELLs versus EOs who received the same RTI instruction over the same duration?

## Method

### *Setting*

The research was conducted in an urban K-8 school district in the greater Los Angeles area. The district was composed of seven elementary schools and two middle schools that housed 4,900 students. Of these students, 24% were ELLs and 69% were from low-income families. The population located within this district was 67% Latino, and nearly 10% of the families lived at or below the poverty level. All teachers employed by this district were considered highly qualified as reported on the School Accountability Report Card (SARC). The research focused on two of the seven elementary schools in the district, with a total population of

368 students, of whom 89 were ELLs and 279 were EOs. The two schools studied were chosen for their similar student populations and size. The two schools represented in this study were not the same as other schools in the district as they both housed smaller than average student populations within the district.

### *Participants*

Only those schools with similar demographics, population size, and RTI implementation methods were chosen for this study. Nevertheless, each school site offered variations in student-grouping criteria for RTI groups, materials used for instruction, and criteria for placement and movement among the RTI groups. Such variations were minimal, however, and the overall implementation followed specific grouping and instructional ideals consistent with tiered-intervention models. In general, both schools studied used reading assessment data from CST and teacher-administered reading assessments to determine grouping for ELLs and EOs. Because students in kindergarten through fifth grade participate in RTI, all primary grades were included in the study. Students chosen for participation were designated as either ELL or EO. Students of varying degrees of ELL proficiency and EOs, regardless of grade, were included in the study. Students who were designated as Fluent English Proficient (FEP) or Re-designated Fluent English Proficient (RFEP) were excluded from the study as a separate group. This exclusion was based on the inclusion of these groups in the ELL population once being re-designated. That is, students designated as RFEPs are included in the ELL group until three years of proficiency is demonstrated in English Language Arts on the CST. The anonymity of school sites and participants was protected. They were not described in any way that would allow internal or external personnel to identify either.

### *Instrumentation and Data Collection*

The study used a repeated-measures design with English proficiency as the one between-groups factor, and California Standardized Tests (CST) as the one repeated-measures factor with three levels. The CST examination is given one time per year and is administered within a two-week window at the end of each school year. The examinations are used to measure growth over time in a particular core subject. The CST reading tests are composed of questions written by professional testing companies and administered under highly secure circumstances. Grade-level teachers, who administered the assessments on the same day so as not compromise the validity of the assessment, administered the assessments within a two-week window at each school site within the district.

California Standards Test (CST) data for English Language Arts were acquired from the database housing multiple data for ELLs and EOs: *Data Director*. The data were collected over the course of two school years. The data collection for this study included the collection of state (CST) scores for both ELL and EO students over the course of two years. The population and sample size was first decided by determining the number of students at each of the two schools and next by determining how many ELL students were a part of the population at both schools. The data were collected for each assessment and then student scores were separated according to the language designation of the student earning the score.

### *Data Analysis*

The data were managed in SPSS and were stored on a password-protected computer. The data were compiled for each trimester. Archived data for each studied group were compared once all data were collected over the course of one school year. The collected data were analyzed through a repeated-measures design in General Linear Model. A repeated-measures

design can reveal differences between groups at each repeated-measure level or for each repeated measure. It also can reveal any differences between the three levels of repeated-measures variable and interactions between the subjects and repeated-measures variable.

Data were collected one grade level at a time (i.e., at the time of the CST). Next, individual student scores were disaggregated to remove all data for individuals who had not participated in RTI for an entire school year. These data were eliminated as anomalies and representing students who were transient during a school year. Additionally, ELL and EO data were separated into two categories, and each group's data were coded. The data for each grade level in a single year were then combined for the ELL group and the same process was repeated for the EO group and then repeated for the next year's data. Further, a color code was created for data that showed an increase, decrease, or stagnation in reading achievement scores for subsequent data collections that occurred after the initial collection.

## Results

This study was conducted to explore the relationship between English Language Learners' (ELL) reading achievement and their participation in the Response to Intervention (RTI) model. Two years of standardized test data were examined to determine if there was a causal relationship between ELL reading achievement and students' participation in the RTI model. The intent of the study was to determine if test scores suggested a relationship between ELL reading achievement and students' participation in RTI. The results revealed a significant relationship for ELL students who had participated in RTI. Additionally, the data for English Only (EO) students revealed a significant relationship between standardized reading test scores and students' participation in RTI. When examined as an entire group with grade level

eliminated as a factor, there was a significant relationship between a students' reading achievement and their participation in RTI. However, when data were disaggregated and grade levels were used to separate the students, there were no significant relationships noted between a student's reading achievement and the student's participation in RTI.

The data were analyzed using SPSS. A repeated measures in General Linear Model (GLM) was used with statistical significance considered to be  $p < .05$ . The data were collected from an independent third-party database service that stores all test data for the district studied. The data were retrieved from the database and filtered.

When filtering data for the study, only students who had participated in RTI for more than one school year were included. Furthermore, the data were filtered by language designation for each student. ELLs and EOs) were coded to distinguish them within the data. Redesignated Fluent English Proficient students (RFEPs) were included in the study. The students were included with the ELL group. The rationale behind including RFEP students coincides with current California law that requires RFEP students be counted in the ELL population when calculating API (Academic Performance Index) and AYP (Adequate Yearly Progress) until they demonstrate three years of proficiency on the California Standards Test (CST). Since students are typically re-designated after third grade, all students included in the data for this study would also be included in the calculations for the schools' API and AYP score. Of the 296 students included in the study, 22 students, or 7.5% of the total population, were RFEP students. Students who entered the schools mid-year or had not completed a full year of RTI were considered an anomaly and were removed from the collected data.

### *Demographic Information*

The participants from which test data were examined to include in the study were selected based on language designation and a minimum of one year's participation in RTI. In this

quasi-experimental process, convenience samples were collected from naturally formed groups; random sampling was not used. The approximately 296 participants were identified by grade level (i.e., year in school) and language designation. Participants attended two separate school sites; however, scores from both schools were combined and included in the participant group for this study. Consideration was also given to the amount of time a student spent participating in RTI. Students were sorted by number of years participating in RTI.

Although the participant data were combined for all grade levels, the participant group consisted of students who had either participated in RTI starting with the first implementation year, had at least two consecutive years of RTI instruction, or had participated in RTI throughout their time in school. Thus, the matching of participants was reliant upon the criteria of language designation and participation rate in RTI. This type of participant selection ensured control of subgroups and categories such as grade level and language designation through factors. The analysis and impact of these factors are detailed in subsequent sections of this chapter. Since School 1 and School 2 demonstrated a decline in enrollment commensurate with district enrollment rates, the studied population had 61 fewer students in 2011-2012 than in 2010-2011. See summary of data sorted by school and language designation in Table 1.

To determine the existence or lack of existence of a relationship between ELL participation in RTI and reading achievement, a general linear model was used ( $Y=XB+U$ ) incorporated within the model of analysis of variance (ANOVA). The model allowed for multiple measures ( $Y$ ) within the design matrix ( $X$ ) that consisted of parameters ( $B$ ) and accounted for possible errors ( $U$ ). The variability of achievement scores was calculated between groups and within groups. Both the between and within groups designs were discussed when analyzing each research question.

When examining the reading achievement of ELL students who participated in RTI, the variability of achievement scores was calculated within groups. That is, the scores of ELL students were examined for each grade level and each year of CST administration (i.e., 2010-2012).

The average CST English Language Arts (ELA) score for each student was sorted in descending order for each grade level and further disaggregated by grade level and then by language designation. Data from two consecutive school years were examined to determine if a relationship existed between RTI instruction and ELL reading achievement. That is, scores were examined to determine if there was a consistent rise in scores for ELL students based on CST proficiency rates. (For the purposes of the study, consistent was defined as three out of the four grades included in the study.) This study examined CST data for all students who participated in RTI. Student data were used to determine if there was a relationship between RTI participation and reading achievement and to examine the progression of grade-level groups. Continuing the within-group design, the data for ELL students were examined to determine if CST scores demonstrated an increase for the same group of ELL students over time. That is, grade 2 ELL student scores from the 2010-2011 school year administration of the CST were examined in comparison to grade 3 ELL scores in 2011-2012 school year. The within-group design remained consistent with demographic selection (i.e., language designation) and participation in RTI. The design was not meant to serve as a measure of an increase in performance due to an identical repeated measure. In this study, the CST was used to assess if reading achievement as measured by the grade level standards would show a rise in proficiency over time while ELL students simultaneously participated in the RTI model. Students who take the CST are scored on a 600-point scale. Students must earn a minimum score of 350 points in order to be considered

proficient. Therefore, students who score 58% or higher are considered to have demonstrated proficiency on the CST.

Of the test scores collected for students at School 1 and School 2, each grade level showed a different rate of reading achievement when the CST scores were compared within groups. For the purposes of this study, the scores for School 1 and School 2 were combined to create a larger sample in addition to creating a context for the relationship between RTI and reading achievement of ELLs in general. For the analysis of these results from this within-group design, the ELL Grade 2 population for the 2011-2012 school year were excluded, since there were no test data for the 2010-2011 school year. In California, CST is administered for Grades 2-11; therefore, data gathered for Grade 2 students for the 2011-2012 school year was the first achievement data for the subgroup. The within-group design data showed that 2010-2011 Grade 2 students demonstrated a decline in CST scores (M=59%) as Grade 3 students in 2011-2012. However, in 2010-2011 Grade 3 students demonstrated a significant increase in reading achievement scores (M=35.5%) from data gathered for the 2011-2012 CST. That is, Grade 4 ELLs demonstrated increases in proficiency from Grade 3 scores in 2010-2011 and Grade 4 scores in 2011-2012. Grade 5 ELLs demonstrated an increase in reading achievement scores between the 2010-2011 and 2011-2012 school years. Grade 5 ELLs demonstrated an increase from 39% to 66.5% for a total increase of 27.5% in ELL reading proficiency scores.

Scores for CST Grade 2 ELLs showed a consistent score for reported for EO students for the 2010-2011 school years (M=66.5%). Scores for ELLs in Grade 2 showed a mean score that was relatively similar to the EO population of participants (M=69.5%). Thus, more than half of all Grade 2 participants regardless of language designation demonstrated proficiencies on the CST in ELA. Grade 3 CST ELA scores for ELL participants demonstrated a significant decline

for both the 2011 and 2012 CST administrations. Grade 3 ELLs demonstrated an overall decline of 59% in reading achievement scores. ELL student scores for Grades 4 and 5 increased after the Grade 3 decline. That is, the ELL mean score for CST ELA did not fall below the initial Grade 3 declines for the 2011 and 2012 school years. Grade 4 ELL scores for the 2011 and 2012 school years demonstrated a significant increase in proficiency rates (M=35.5%). Grade 5 ELL scores for the 2011 and 2012 school years demonstrated a higher rate of achievement than the initial decline in Grade 3; the data reflect a second increase in proficiency (M=27.5%) for ELLs for the CST ELA administered for 2011 and 2012. Figure 1 shows the participant reading achievement data.

A between-subjects design was used to examine data to determine if CST reading achievement scores were comparable for both the English Language Learner (ELL) and English Only (EO) groups. RTI instruction in the participating school district was delivered within a model that serviced K-5 students regardless of language designation. And all students, regardless of language designation begin taking the CST in Grade 2. In general, EO scores remained consistent from 2010-2012. As shown in Figure 1, Grade 2 students performed about the same from year to year as did students in Grades 3, 4, and 5 with little or no significant change in reading achievement scores for the group as a whole. Grade 2 EO scores for the 2010-2011 and 2011-2012 CST were similar to ELL scores in that there was an insignificant difference between the groups' reading achievement scores. EO students' scores also declined in Grade 3 for both the 2010-2011 and 2011-2012 CST. The data revealed a less significant decline in reading achievement scores for EO students than for ELLs (M=29.5%).

EO students demonstrated a more substantial rebound for subsequent years of reading achievement scores after Grade 3. When considering the difference in scores from Grade 2 to

Grade 3, EO students demonstrated a decline with a mean difference of 29.5%. In comparison, ELLs showed a consistent decline in reading achievement scores from Grade 2 to Grade 3 (M=59%). During each administration of the CST, EO students demonstrated a higher reading achievement rate than did ELLs. The data does, however, reveal a consistent pattern of ascents and declines much like that of ELLs with a final and unique rise in Grade 5 scores for ELLs. Following the above-mentioned decline in the demonstration of reading achievement, EO students demonstrated a significant increase in reading achievement scores. CST data show a mean increase of 37% from Grade 3 to Grade 4 for EO students. This increase in reading achievement scores is nearly identical to the increase revealed in the data for ELLs. Students in the ELL population demonstrated a mean increase of 35.5% from Grade 3 to Grade 4. From Grades 4 to 5, EO data revealed a slight decline in reading achievement scores similar to the data for ELLs. A mean decrease of 7.5% in reading achievement scores was revealed in the data for EO students. Grade 5 ELLs, however, did not show the same type of decline from Grades 4 to 5 as did the EO students. In fact, Grade 5 ELLs demonstrated a 27.5% increase in CST reading achievement scores. Variance and error were estimated within ANOVA and a significant (less than 0.5) correlation does exist between RTI participation and reading achievement scores between groups [ $F(1,216) = 7.40, p < 0.5$ ]. In accounting for the factors of RTI participation and repeated CST reading achievement scores, it can be concluded that there was a significant relationship between the factors of RTI participation and reading achievement scores within groups. While ELL and EO participants participated in RTI for the same amount of time, the reading achievement scores did not demonstrate the same rate of reading achievement for both groups. Table 2 shows the general linear model between group data.

When accounting for the data demonstrating a decline in proficiency and therefore reading achievement, the EO students showed a larger percentage of recovery at a faster rate than did ELLs. That is, though both groups' data showed a decline in Grade 3, EO students showed higher scores, yet ELLs showed larger gains in scores. Therefore ELLs demonstrated a larger increase in the number of students demonstrating reading achievement in a shorter amount of time in Grades 4 and 5. This can be accounted for in the pattern of ascents and declines the EO students demonstrated consistently throughout test years and grade levels. Though the EO and ELLs began their CST reading achievement with relatively similar scores and demonstrated a similar pattern of declines and increases in scores, the EO population outscored the ELL population in each grade level for both the 2010-2011 and 2011-2012 school years. However, the results of this study indicate that though the EO population received an overall higher score, the ELL scores grew significantly faster as ELLs spent more time participating in RTI. The interaction between factors for the between groups design qualifies the notion that reading achievement is modified by language designation and participation in RTI. See figure 2 for data between groups design.

## Discussion

The Response to Intervention (RTI) model was and is designed to assist all students, identify learning disabilities early, and prevent the failure of struggling learners. Studies have shown that schools that formally implement RTI do so with fidelity. RTI emphasizes a strong core curriculum and intervention for all students. To be successful, the model should be formally in place throughout a school (Berkeley et al., 2009). There are relatively few studies that show a

relationship between RTI and English Language Learners (ELLs). The purpose of this study was to examine the relationship between students' participation in the RTI model and ELL reading achievement.

Because the ELL population was over-represented in special education, and ELLs were often incorrectly identified as needing special services rather than differentiated teaching or intervention, RTI was presented as a solution to this problem (Ross & Begeny, 2011). Linan-Thompson and Ortiz (2009) describe RTI as an alternative to special education for ELL students. As an alternative, RTI provides all students with necessary intervention or enrichment instruction that works to promote student success (Haager, 2007; Orosco & Klingner, 2010).

The RTI model attempts to meet the target for effective instruction by providing a comprehensive school-wide system that encourages early intervention for those students who experience difficulties in learning to read, regardless of their language background or school history (James, 2004). With RTI as the school-wide intervention model, schools began shifting their focus from one teacher's results with one group of students to the success of all students being taught through a collaborative effort by all teachers. Through these efforts, evidence of a systematic attempt at narrowing the achievement gap and increasing students' chances for long-term success emerged (Fien et al., 2011).

RTI significantly impacts schools on multiple levels. Schools have been economically impacted in the fulfillment of both the staff development and supply accrurement demands that are posed by such an intervention (Murawski & Hughes, 2009). Federal regulations require RTI to function as a step between the general education classroom and the special education classroom. Schools that use the RTI model and provide intervention to students had to face

several changes to institutionalize practices and make curricular adoptions, including implementing and sustaining the model (Murawski & Hughes, 2009).

The results revealed the relationship between reading progress for ELLs and their participation in RTI. Scores for students were collected over the course of two years. The CST scores were then examined for each individual school. The overall combined scores were also examined. The results for ELL and EO students were reported separately in this study to provide a context for relationships between RTI participation and ELL reading achievement revealed by the data collected.

Review of the CST scores for ELLs over two years indicated a significant relationship between ELL student participation in RTI and reading achievement. Scores for ELLs demonstrated different results at the two schools participating in this study. English Language Learners demonstrated the same pattern of declines and increases at both schools, and when the scores for ELLs at both schools were combined, the results showed a significant relationship between ELL participation in RTI and reading achievement. ELLs at both school sites demonstrated a high rate of reading proficiency with the first administration of the CST in Grade 2. The second administration of the CST showed a steep decline in reading proficiency for Grade 3 ELLs. A similar pattern for Grades 4 and 5 showed that ELLs recovered from the decline in Grade 3 reading achievement scores; however, scores for ELL reading achievement never returned to the initial high rate of reading proficiency scores in Grade 2.

It was hypothesized that ELLs would demonstrate a faster rate of reading achievement than ELLs who did not participate in RTI. The district that participated in this study did not have a school population that did not have RTI instruction. RTI instruction in the participating school district was delivered within a model that serviced K-5 students regardless of language

designation. Although this study did not include students who did not participate in RTI, this study demonstrates reading achievement results that exceed current research on ELL reading achievement. According to Genesee, Leary, Saunders, and Christian (2005) ELL students take several years (at least 3-5 years) to acquire the language necessary to be literate. The study by Genesee et al. (2005) also provides a correlation between ELL academic language acquisition and the demonstration of reading proficiency.

The schools studied adopted identical semi-scripted programs that focused on academic vocabulary acquisition. A significant relationship between ELL reading scores and participation in RTI can be identified from the data in this study. ELL proficiency scores for Grade 2 students in both the 2010-2011 and 2011-2012 school years were scores belonging to students who had also received RTI instruction for at least two full years. This group of students demonstrated an overall proficiency rate of 69.5% in English Language Arts. The high proficiency rate combined with the differentiated and targeted instruction provided by the RTI model demonstrated a relationship between the two factors for Grade 2 students.

Contrary to the findings of Genesee et al., the Grade 3 students did not demonstrate a growth in reading proficiency, though they received an additional year of RTI instruction using the same model with the same curricula as all groups included in the study. Despite acquiring an additional year of reading intervention focused on vocabulary, the Grade 3 ELL group demonstrated the most significant decline in reading achievement of any of the ELL groups included in the study.

Research has shown that this type of decline in reading coincides with the fact that in grades kindergarten through Grade 2, students *learn to read* and in Grades 3 and beyond, students *read to learn*. In California, students in Grade 2 have portions of the test read to them

by the teacher or proctor. While the Grade 2 administration of the CST is the students' first exposure to a standardized test, reading skills are put in to practice by individual students through vocabulary application and comprehension skills that must be demonstrated by answers provided individually. The extra scaffolding in Grade 2 for standardized testing, and the drastic change in Grade 3 where students must read the entire test on their own, accounts for the drastic decline in reading achievement proficiency scores.

The results for CST administrations during the 2010-2011 and 2011-2012 for Grades 4 and 5 ELLs indicated that students recovered from the initial decline in third grade. After participating in the RTI model from five to six years, ELLs demonstrated a high rate of student achievement. In Grades 4 and 5, students demonstrated a rate of reading proficiency that was higher than Grade 3 reading proficiency. By Grade 5, students demonstrated a rate of proficiency that was within 3% of the Grade 2 rate of proficiency. The reading achievement by ELLs demonstrated a reading proficiency rate that was similar to the Genesee et al. (2005) study, in that it demonstrated the highest rate of reading achievement with the most difficult reading contained within the CST for Grades 2 through 5. ELLs who have had the most academic support for acquiring reading skills demonstrate a reading achievement rate of 66.5%. With more than half of the study's population included in demonstrating reading growth, the results can be considered significant.

Overall, students designated in both the ELL and EO student groups demonstrated a similar pattern of increases and declines in reading achievement. Though the patterns were similar and the EO group began with the Grade 2 administration of the CST demonstrating a 66.5% of proficiency, the results for EO students were not the same as those for ELL students.

It was hypothesized that ELLs who participated in RTI would show a lower rate of reading improvement than their EO counterparts. Though language acquisition is often an indication for reading achievement, ELLs did not demonstrate a slower rate of achievement to acquire a score on the CST that demonstrated reading achievement (Genesee et al., 2005). EO students also demonstrated a significant decline in test scores in Grade 3. In spite of this decline, like the ELL population, the EO population showed a recovery in scores for Grade 4. The EO population, however, did not demonstrate a faster rate of reading achievement because the EO group of students did not continue to consistently increase reading achievement scores after Grade 3. The EO group showed a consistent pattern of increases and declines that did not mirror that of the ELL population. Therefore, with consistent increases in reading achievement, ELL students demonstrated reading achievement while participating in the RTI model at a faster and more consistent rate than their EO counterparts. EO students ultimately earned higher scores in each grade level. This can be attributed to their advantage of learning in their primary language. Whereas, ELLs often acquire vocabulary and ability of thinking skills as well as meta-cognition first to their learning before demonstrating proficiency.

### *Limitations*

Because this study was conducted in a district that served a largely homogeneous community, when discussing ELL achievement, this study addresses students with Spanish as a first or native language. There is room for future study regarding students from various language backgrounds. The relationship between ELL speakers and their participation in RTI has not yet been widely researched as a study that categorizes the relationship by native language and differences in acquiring language.

Further limitations of this study included the size of the district that participated in this study. The study was conducted in a district comprised of only seven elementary schools, however, only two schools were selected for participation in this study. The geographic area served by the district contains a relatively homogeneous population, with little variation in socioeconomic status. Students with special needs and middle school ELLs, although receiving reading intervention outside of the RTI model, were not included in this study. The ELL population studied was limited to general education, native Spanish speakers in the primary grades. Students with RFEP language designations were included in the ELL population for this study because their CST scores are counted as part of the ELL subgroup for approximately three years after being reclassified. Excluding RFEP students from this study could yield a different depiction of reading achievement for both ELL and EO students. Because the focus was on reading, other subjects commonly addressed in RTI, such as math, were not studied. These limitations affect the generalizability of the findings. Limitations also include examining the relationship between RTI and ELL reading achievement over a period of two years. A greater length of time is needed to monitor changes in achievement, trends, and patterns in CST reading scores for ELLs.

### *Implications*

Students who are English Language Learners and also participants in the RTI model demonstrate a relationship between their participation in RTI and reading achievement. ELLs consistently showed reading progress in the grade levels that participated in RTI and measured for progress by the CST. The results of this study suggest that ELLs who participate in RTI involving target literacy instruction focused on vocabulary acquisition, acquire proficient reading skills at a rate commensurate with or more quickly than the three-to-five-year time period

indicated in previous research (Genesee et al., 2005). School administrators can use the results of this study to guide their RTI model implementation. To support effective implementation practices for RTI, school administrators can use the descriptive data found in this study to consider possible RTI implementation options. Furthermore, administrators can refer to this study when evaluating the consistency of school-specific reading interventions and determine if consistency is effectively influencing ELL instruction.

The results of this study indicated that RTI was a beneficial practice for ELLs. Further study is needed to address the decline in test scores for both ELL and EO students in Grade 3. District administrators can use the results of the study to address curricular needs for ELLs during the first year of schooling between the scaffolded Grade 2 administration of the CST and the independently read Grade 3 administration of the CST.

#### *Recommendations for Practice*

Based on the findings of this study, it is apparent that many more years of research are needed to examine the effects of RTI. This study covered the span of two school years. There was and is clearly a need for longitudinal data on reading achievement for ELLs participating in RTI. By conducting the study during a lengthier frame of time, more data would be provided. With longitudinal data, administrators could examine changes within test scores over time to determine whether existing patterns could inform teaching practices.

Two schools were selected to participate in this study. Though the participants in this study could be considered marginalized for a variety of reasons, further study is needed. Further study of RTI could better inform teaching practices of ELLs if a consistently implemented RTI program were established and studied within a larger school district or a larger number of schools. By examining a larger sample from a larger number of schools, a slightly less

homogeneous population might be studied. This study included participants who were of the same race and socio-economic background with little difference in demographics. Including a more diverse sample from a variety of schools will allow researchers to reduce bias in a study. A study of a more diverse sample would also inform school administrators about how RTI affects different groups of varying backgrounds. Although ELLs are considered a marginalized population, further study on RTI could include students in special education classroom settings and exclude RFEP student performance. Students with RFEP designations, as mentioned previously, though no longer considered ELLs, are monitored and counted in the ELL population for three years when it comes to CST test scores. Including data from students in special education and excluding RFEP students would allow school administrators to evaluate the relationship between the tier system and student progress.

A further study of RTI could examine the relationship between reading achievement and participation in RTI and older students. This study included only participants from a K-5 school setting. Reviewing the reading achievement scores of middle school students would provide more data on RTI participation and the possible effects on reading achievement with middle school students. Currently, most research on RTI focuses on early intervention in the primary grades. The need for RTI, however, exists beyond the elementary school setting and could inform school leaders by providing a longitudinal understanding of reading intervention for all students.

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Table 1

*Participant numbers by population type for School 1 and School 2*

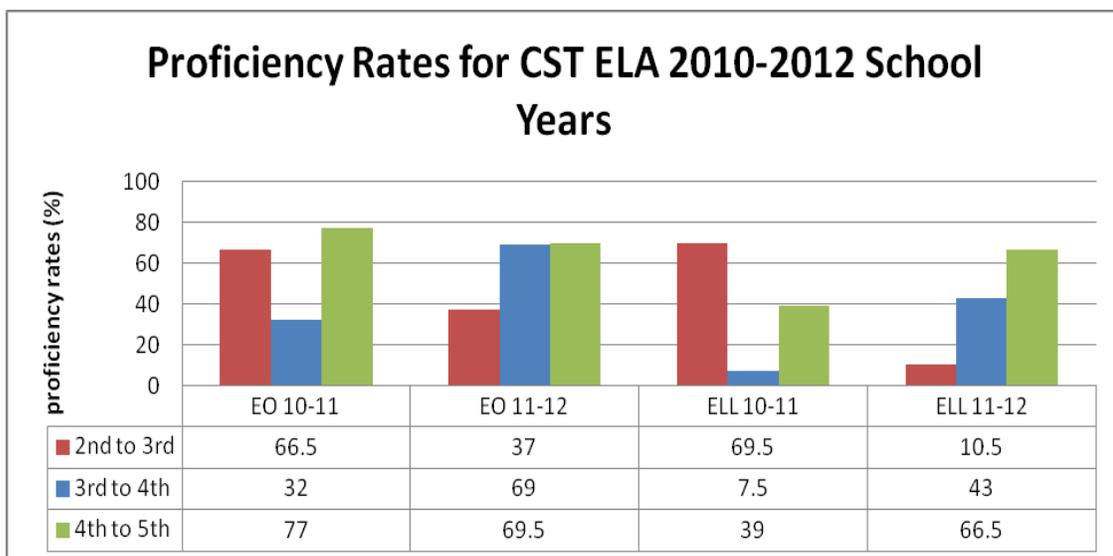
School	CST Test Year	ELL Participants	EO Participants	Total Number
1	2010-2011	61	111	172
2	2010-2011	69	116	185
1	2011-2012	62	91	153
2	2011-2012	60	83	143

Table 2

*Difference in reading progress between two groups*

Source	df	F	Sig.
Groups	1 216	7.40	.01*

\*p<0.5



*Figure 1. Group proficiency rates*

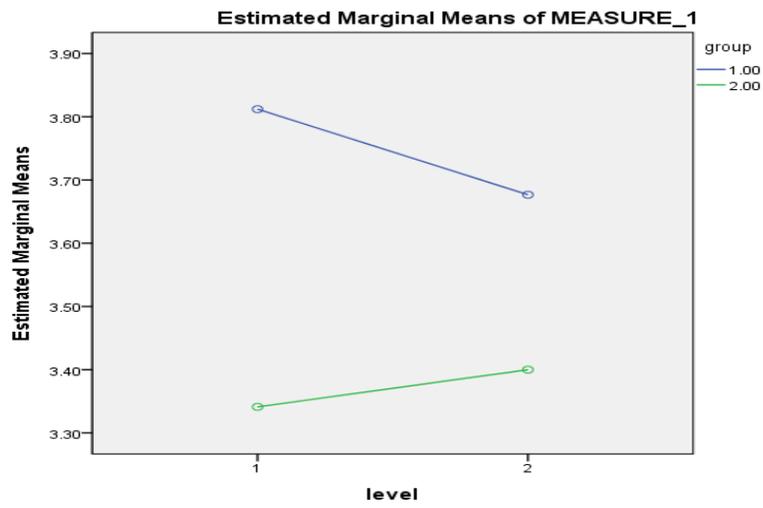


Figure 2. EO (group 1) and ELL (group 2) interaction of means.

The acquisition of literacy skills in primary grades is a complex process; therefore, teaching knowledge and strategies should be acquired and implemented in a way that captures the variation and intricacy of skills required for these complex tasks. As noted by Adams (1990), there should be a systematic approach to reading instructional practices if our goals as researchers, educators, and parents are to improve reading skills and develop long-lasting interest in reading for students. Since the passage of the No Child Left Behind Act of 2001, appropriate reading instruction to alleviate reading deficits in primary grades has been the main focus of reading research studies (Fehr et al., 2012; McMaster, Fuchs, & Fuchs, 2007; Meisinger, Bloom, & Hynd, 2010; Mesmer, 2005; Morrow, 2001; Morrow, 2012; Pullen, Lane, Lloyd, Nowak, & Ryals, 2005; Simpson, 2005; Stichter, Stormont, & Lewis, 2009; Thames et al., 2008; Yeh, 2003). An early report of the National Research Council (1998) identified three fundamental problems in the acquisition of required reading skills in primary grades: (a) difficulties in understanding and using phonics to gain fluent and accurate word reading skills, (b) a failure to obtain early literacy skills and needed strategies for the comprehension of written text, and (c) the absence of the initial motivation to read. Based on thirty years of research, the National Reading Panel (2000; 2012) currently supports five strands of effective reading instruction (phonemic awareness, phonics, fluency, vocabulary, and comprehension) to address these three fundamental problems. These five strands are known collectively as the *Big 5 Ideas*.

In 1997, the National Reading Panel (NRP), comprising a group of reading experts, was called upon by the United States Congress to closely examine the necessary elements of effective literacy instruction in response to increasing reading deficits in primary grades (NRP, 2000; 2012). As a result, the NRP agreed upon and finalized five strands of effective reading instruction: (a) phonemic awareness, (b) phonics, (c) fluency, (d) vocabulary, and (e)

comprehension. First, phonemic awareness involves the ability to focus on and manipulate individual sounds in spoken words. As suggested by Burke, Burke, and Crowder (2006), phonemic awareness instruction should be emphasized in kindergarten and first grade. By the middle and toward the end of first grade, students should be able to read connected text. Second, phonics refers to the ability to match sounds to letters and use this knowledge in reading. Third, fluency involves the ability to read connected text with speed and accuracy. Fourth, vocabulary refers to the ability to understand and use words. Olson and Gee (1991) concluded that young readers usually have difficulties understanding daily reading because of their lack of word recognition in print. Fifth, comprehension involves the ability to acquire meaning from text.

First grade teachers play a critical role in shaping the foundation for early literacy skills acquisition of primary students. Past research studies have indicated that primary students whose teachers followed the *Big 5 Ideas* to teach reading had higher reading abilities when compared to other students. The purpose of this current research was to address a gap in the literature by examining first grade teachers' perceptions of the *Big 5 Ideas*, their levels of knowledge of the literacy concepts, the frequency with which these teachers use their knowledge of the *Big 5 Ideas*, and the possible influence of the use of the *Big 5 Ideas* on their routine reading instructional practices. A mixed methodology of cross-sectional and observational design was used in this research, which consisted of two phases. Phase One was conducted using a developed questionnaire that was composed of necessary components of the *Big 5 Ideas* in reading instruction to be completed by the 780 selected first grade teachers. Quantitative data were collected through an established online survey company (Qualtrics) and analyzed using descriptive statistics, one-way multivariate analysis of variance (MANOVA), and one-way analysis of variance (ANOVA). Phase Two was completed using a developed observational

checklist and visual analysis (i.e., five research assistants observed and collected qualitative data from five selected first grade classrooms).

The findings related to Phase One of this research indicated: (a) universal agreement on the importance of implementing the *Big 5 Ideas* in daily reading instruction, (b) relatively adequate levels of knowledge of the *Big 5 Ideas* of all first grade teachers, (c) relatively high percentage of implementation of the *Big 5 Ideas* during daily reading instruction, (d) no statistically significant differences between first grade teachers' perceptions of the *Big 5 Ideas* and their degree types, number of years teaching, or types of licensure, (e) statistically significant differences in first grade teachers' implementation of the *Big 5 Ideas* based on the number of literacy courses taken during teacher preparation programs for phonics, vocabulary, and fluency, and (f) no statistically significant differences in first grade teachers' implementation of the *Big 5 Ideas* based on the number of literacy courses taken during teacher preparation programs for phonemic awareness and comprehension.

The findings related to Phase Two of this research revealed that there were strong relationships between the observed first grade teachers' (e.g., teacher one and teacher five) perceptions of the *Big 5 Ideas* and their actual implementation of the *Big 5 Ideas*. Conversely, there were weak relationships between these teachers' (e.g., teacher two, teacher three, and teacher four) perceptions of the above five strands of effective reading instruction and their daily observed reading instructional practices.

During this poster presentation, the presenter will briefly discuss with conference attendees the study entitled "*First Grade Teachers' Perceptions of the Five Strands of Effective Reading Instruction and Their Possible Influence on Daily Instructional Practices*". During the session of this poster presentation, the attendees will be provided with handouts and able to

discuss the results of this study with the presenter on: (a) first grade teachers' perceptions of the *Big 5 Ideas* in effective reading instruction, (b) first grade teachers' levels of knowledge of the *Big 5 Ideas*, (c) the frequency of first grade teachers' implementation of the *Big 5 Ideas* during their actual daily teaching practices, (d) the difference in first grade teachers' perceptions of the *Big 5 Ideas* based on degree types, number of years teaching, or types of licensure, (e) the difference in first grade teachers' implementation of the *Big 5 Ideas* based on the number of literacy courses taken during their teacher preparation programs, and (f) the relationship between first grade teachers' perceptions of the *Big 5 Ideas* and their actual implementation of the *Big 5 Ideas*.

## **A Question of Identity: Mirrors as a Tool for Self-reflection**

**Presented by Dr. Susan Ridley**

This study was a starting point to clarify or (re)discover adolescent's sense of self identity. The question of identity is fundamental to everyone and informs values, decision making, and quality of life. For adolescents, who are negotiating the developmental growth from childhood to adulthood, it is especially important to gain a sense of self, and direction in life. How can expressive arts therapies connect to one's spiritual self; to the inner core of one's being? Can the creative process transform negative life experiences into life affirming opportunities for high school students? *The Mirror Project*, which utilized mirrors as a tool for self-reflection, was a qualitative study on the question of identity, "Who am I?"

This fundamental question has been pondered through the centuries by enquiring minds searching for answers to the meaning of life. Exploration of these concepts is vital in dealing with activities of daily living and are essential components of psychological well-being, and determining factors in the formation of coping skills and resiliency to life's challenges. A strong foundation and belief in one's identity, meaning and purpose in life, as well as spiritual convictions may help turn negative experiences into opportunities for growth (Ryś, 2009). Adolescents who have a strong sense of self can be a protective factor in resisting peer pressure and involvement in unwanted behaviors such as bullying, vandalism, or self harm (Guerra & Bradshaw, 2008). The addictive pleasures of alcohol, tobacco, and other drugs are less likely to attract those with a clear idea of who they are (Griffin et al., 2001).

In philosophy, the concept of self-realization extends back to the Hellenic tradition of eudaimonism, most notably presented in *Nichomachean Ethics* by Aristotle (trans. 1999). In eudaemonist philosophy, the daimon or *true self* refers to the unique potentialities of each person, the realization of which represented the fulfillment of one's destiny (Norton, 1976). A search for identity was an effort to identify those potentials that corresponded to the real self (Waterman, 1993). Self-realization was also central to the work of Spinoza and the existentialists, such as Heidegger and Sartre (Stevenson & Haberman, 1998; Waterman, 2004) and in psychology, self-realization was conceptualized by a number of personality theorists including Horney (1950) who wrote of the real self "as the central inner force...which is the deep source of growth" (p. 17). Erikson (1994) believed that the final task of human development was an understanding of all one's achievements and experiences resulting in integrity of the self. He wrote that "In the social jungle of human existence, there is no feeling of being alive without a sense of identity" (Erikson, 1968, p. 38).

In *The Mirror: A History* (2001), Melchior-Bonnet felt that "The mirror, 'matrix of the symbolic,' accompanies the human quest for identity" (p. 4). Mirrors have been featured in folklore, religion, magic, science, art, and literature. They have appeared in a myriad of forms and usage that have included revealing, hiding or distorting reality, as a communication device, weapons of war, to search the stars, to ward off evil spirits, for divination, or as a treasured possession in the after-life (Giles & Joy, 2007; Melchior-Bonnet, 2001; Pendergast, 2003). The proliferation of mirrors as metaphors abound in therapeutic literature, philosophy and psychoanalytical texts implying that the reflected image, either real or imaginary, may provide insight in a clinical context (Gormley, 2008; Weinberg, 2004). For Haglund (1996), "Part of the

power of the mirror metaphor is that the single image captures many aspects of human development and human experience” (p. 226). Shengold (1974) believed that the mirror was a metaphor for the mind which reflected the image of self and others. Pines (1984) described mirroring in group psychoanalysis as a process of objective self-reflection. In western philosophies, the psyche is seen as a mirror of reality, while in Buddhism, it is the world that mirrors back who we are in all aspects of our lives (Bolen, 2005; Nhat Hanh, 2006).

This paper will focus on the results of a high school freshman survey ( $N = 337$ ) of an exhibition of mirrors that were created in expressive arts therapy groups around the question of identity, who am I? Several themes emerged from the data collected from the freshman survey including (a) expressing oneself, (b) inner feelings, (c) the social norm, and (d) hope for the future. An analysis of the high school freshmen surveys indicated that the majority of participants viewing the mirrors found that reflecting on the question of identity in the exhibition was helpful and that students felt connected to others on sensitive issues and concerns. Teens often feel that they are alone in their suffering and this exhibition was intended not only to help students pause and reflect on their identity, but to show that others felt the same way. Results indicated that mirrors have the potential to bridge the metaphysical barrier and connect us to our most inner thoughts. This clarity of vision can assist in creating the foundations for identity, meaning and purpose in one’s life.

There is a wealth of research on the therapeutic use of mirrors in cognitive, emotional, and physical therapies as well as a proliferation of mirrors as metaphors in therapeutic literature, philosophy, and psychoanalytical texts. Although there is no research data on the specific use of mirrors as a self-reflection tool, the results from this limited study indicated that mirrors can be used to connect to ones inner thoughts and feelings on the topic of identity not only during the creation process, but also as a reflection for those viewing the mirror exhibition. This result is similar to Waterman’s (2004) study that concluded that personal expressiveness had a strong association to identity formation, and the development of one’s potential and purpose in life. Waterman also felt that these activities were likely to involve connection to others and lead to better identity options.

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Title: The Practicality of Using Movies and TV series to Motivate Learning  
Autonomy in an English Speaking-Listening Class

Topic area: ESL/TESL

Presentation format: Paper Session

Description: The presentation will start with the small-scale study in terms of how I carried out the study and what students were expected to do during the period of study. Following that, I will focus on the results of pre-test and post-test and two questionnaires, and discuss the findings of the study and the shortcomings of the research design. The presentation is open to participants' suggestion and comments.

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# The Practicality of Using Movies and TV series to Motivate Learning Autonomy in an English Speaking-Listening Class

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## **Abstract**

The notion of collaborative learning and teaching in foreign language education has been popular for decades. The learners are believed to learn best if they learn through the conscious or unconscious internalization of their own or observed experiences which build upon our past experiences or knowledge. There is an assumption that the learning that can result from the experience, if the activities are manifested ‘properly’ (Moon, 2001). Within this concept, the role of teachers as collaborators in the teaching and learning process represents a change to traditional educational patterns. Moreover, increasing numbers of instructors are realizing the importance of motivating learning autonomy among students in EFL (English as a Foreign Language) classrooms. In this small-scale study, students were asked to watch a movie and a TV episode every week for ten weeks and write reflection sheets. A pre-test and a post-test were applied to analyze students’ English attainment. Two questionnaires were used to explore students’ reflection on learning autonomy and learning attainment. In this paper, attention is first paid to consider to what extent the concept of a teacher as a collaborator can be applied to the university EFL classes in Taiwan, and how to motivate EFL learners’ autonomy. Then, the theoretical grounding of the concept and the characteristics of a teacher as a collaborator is discussed. Following this, the English education contexts in Taiwan is highlighted in order to consider how far this concept can be achieved. Finally, conclusions will be drawn from this small-scale exploration.

## **Keywords**

Teacher as collaborator, learning autonomy,

Community and College Collaboration for Student Workforce Readiness

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ABSTRACT

This paper discusses the findings of a phenomenological study regarding methods of successful transition of students from the classroom to the workplace. Results of interviews from working managers and college graduates include information on what specific skills are required, what learning environments are appropriate, and the cognitive skills that result in creative and innovative thinking. Seeking opportunities to transfer the learning that occurs in schools into companies require that teachers and managers collaborate to create a bridge for postsecondary students.

**Hawaii International Conference on Education  
Conference Proceedings Submission**

**Title:**

Evaluation of a University Worksite Walking Competition on Perceived Levels of Stress and Physical Activity Participation

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## ABSTRACT

**INTRODUCTION** Extensive research has established the importance of physical activity and its role in the prevention of lifestyle-related diseases. Further, the workplace can be an effective arena for health behavior change, like increasing physical activity time. Limited research has investigated the effects of university worksite wellness programs on perceived stress and physical activity levels. The purpose of this study was to examine perceived stress scores and physical activity levels of university faculty and staff before and after a 4-week walking competition sponsored by the university.

**METHODS** The research study was a pre/post design. Before the start of the walking competition, 47 participants completed the Perceived Stress Questionnaire (PSQ), and the International Physical Activity Questionnaire (IPAQ). Following the 4-week competition, 45 participants returned and completed both the PSQ and IPAQ. **RESULTS** The results indicated that there was no significant difference ( $p > .05$ ) in perceived stress score before ( $M = 0.24 \pm 0.30$ ) and after ( $M = 0.18 \pm 0.26$ ) the walking program. There were significant differences ( $p < .05$ ) in days of moderate physical activity per week before ( $M = 2.34 \pm 2.00$ ) and after ( $M = 3.08 \pm 2.22$ ) the competition. There were significant differences ( $p < .05$ ) in vigorous activity days per week before ( $M = 2.11 \pm 1.91$ ) and after ( $M = 2.82 \pm 2.30$ ). There were also significant differences ( $p < .001$ ) in walking days per week before ( $M = 4.37 \pm 2.31$ ) and after ( $M = 5.87 \pm 1.74$ ) the competition. **CONCLUSION** Overall, a 4-week walking competition had no effect on perceived stress. However, it was effective in increasing physical activity levels among university employees. Areas for further researcher would include evaluating a worksite health promotion program of longer duration and its effect on perceived stress levels.

## **Assessing Curricular Alternatives: Graded Readers and EFL Learning Motivation in Non-English Majors**

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### **Abstract**

This study set out to evaluate the impact of instructional materials on the English as a Foreign Language (EFL) learning motivation of a specific population of learners. More specifically, it sought to evaluate how the use of graded readers, used in conjunction with online learning and The Moodle Reader Module, impacted the EFL learning motivation of Japanese engineering majors. Following a semester-long online course, a questionnaire consisting of four scales adapted from Keller's (2010) Instructional Materials Motivation Survey (IMMS), and open-ended items, was administered to a sample of 230 learners. Results revealed positive endorsement of attention, relevance, confidence, and satisfaction scales. The open-ended items also revealed an overall positive endorsement of graded readers and were valuable in providing descriptive insights into the results of the IMMS. The study concludes by summarizing possible implications of using graded readers with this particular population of learners, and suggests avenues for future research.

### **Introduction**

In today's globalized world, English as a Foreign Language (EFL) instruction has expanded commensurate with the increasing perceived importance of English as the international language of business and commerce (Crystal, 2003; Mok, 2006). One result of this expansion has been an increase in English

instructional hours across all educational levels in countries such as Japan (Fujimoto-Anderson, 2006). In terms of tertiary education in that country, this has resulted in a rising number of EFL classes across all majors and fields of study. For learners pursuing advanced degrees or licenses in areas such as engineering, such foreign language requirements can be perceived negatively; as an unwelcome burden that distracts from primary academic goals (Jacques, 2001; Koga, 2010; Kuwabara, Nakanishi, & Koma, 2005). In such instances, mandatory English education can be perceived as adversarial, and therefore may not be willingly embraced by learners. This outlook, combined a number of cognitive and affective variables observed to contribute to demotivational states in Japanese tertiary EFL learners (Berwick & Ross, 1989; Burden, 2002; Falout & Maruyama, 2004; Saito, 2007), represents a particular challenge to EFL educators teaching engineering and science majors in Japan.

While a great deal of research has been conducted into the characteristics of Japanese learners' EFL learning motivation (see Johnson, 2009), little inquiry has been directed toward how particular curricular interventions can influence and affect learners' motivational states. One area which holds significant potential, and which instructors have some degree of control over, is the content of instruction. Instructional content, particularly instructional materials, has been identified as having potentially motivating and demotivating influences on learners (Chambers, 1998, Falout & Maruyama, 2004; Gorham & Millete, 1997; Peacock, 1997). The demonstrated importance of this classroom variable suggests that its augmentation might provide a possible direction for instructors seeking to improve motivational engagement in learners.

It is particularly difficult for educators to find instructional materials that are consistently motivating and effective for a wide range of learners. The recent development and expansion of graded readers series and extensive reading resources, and the plethora of research that has accompanied their increased use (see Day & Bramford, 1998 and Krashen, 2004 for summaries), have rendered these materials and approaches reliable and proven options for foreign language instruction. The use of graded readers in extensive reading environments has

demonstrated that they not only improve learners' reading speed and proficiency (Bell, 2001; Constantino, 1995; de Morgado, 2009), but are an efficient means for implicit acquisition of vocabulary and grammar structures (Horst, 2005; Horst, Cobb, & Meara, 1998; Waring, 2009; Webb, 2005). In addition to these language learning outcomes, learners' attitudes towards, and degree of enjoyment and interest in, reading have been shown to improve when using these materials and approaches (Al-Homoud & Schmitt, 2009); Cho, & Krashen, 2001; Dupuy, 1997). Similar positive results have been observed with Japanese learners using graded readers and taking part in extensive reading programs (Critchley, 1998; Forrest, 1997; Hayashi, 1999; Iwahori, 2008; Mason & Krashen, 1997; Powell, 2005; Robb & Susser, 1989; Tanaka & Stapleton, 2007).

### **Motivation and extensive reading**

In addition to the benefits discussed above, ER has also been identified as contributing to motivation in learners. Motivation has been identified as an important individual difference in language learners (Dörnyei, 2006; Oxford, 1992; Skehan, 1991), and appears to play a particularly important role in L2 reading (Brantmeier, 2005; Gee, 1999; Grabe, 1991). In terms of extensive reading, an early study by Elley (1991) reported that motivation appeared to accompany improvement in reading proficiency and attitudes in "book flood" programs in Fiji. She observed that an increase in intrinsic motivation appeared to stem from learners' experiences selecting and sharing picture books with others. A high state of intrinsic motivation, or "flow", was also observed in readers by McQuillan and Conde (1996) who reported that texts that were perceived to be interesting, or to have personal or intellectual value, were particularly effective in promoting optimal engagement in learners. In a study expressly examining the motivational and attitudinal impact of extensive readers in Tunisian EFL students, Maamouri Ghrif (2003) revealed that ER was particularly effective in promoting initiating motivation in learners. However, the interest value of reading resources and program structure were important factors in sustaining motivation over a five-semester reading program. In a more recent study, Arnold (2009) observed

motivation accompanying an increase in confidence in learners reading in a modified ER program for German as a FL in the United States. Interviews with readers participating in the study revealed that some became motivated to read independently outside of class assignments. A similar outcome, with ER affecting learners positively in terms of motivated autonomous learning, was revealed in Hitosugi and Day's (2004) examination of JFL learners' in the United States.

Extensive reading has also been demonstrated to positively affect language learning motivation in Japanese EFL students. Yamashita (2007), in an examination of the effect of L1 to L2 reading attitude transfer in Japanese university students, revealed that while reading attitudes do in fact transfer from L1 to L2, reading abilities and strategies do not. An implication of these findings was that motivation could be positively affected by positive attitude transfer and accompanying proficiency gains, while students with poor L1 reading attitudes would be harder to motivate. In a qualitative longitudinal case study examination of two Japanese middle school students taking part in an ER program Nishino (2007) demonstrated the dynamic nature of reading motivation. Specific causes of fluctuations in motivation were identified as: achievement, the pleasure or flow of reading, confidence, independence orientation, content interest, preferences in terms of authentic texts, and other academic pressures (such as entrance exams). Nishizawa, Yoshioka and Fukuda (2010), in examining the effects of a four-year ER program on students at a national technical college, reported that ER lead to significant improvement in English proficiency only after 2-3 years of reading simple stories, demonstrating a minimum threshold of 300,000 words for improvement. The participants, who were described as "reluctant readers", were shown to be motivated by reading graded readers they perceived to be interesting and easy.

### **Study overview**

The demonstrated value of ER in improving reading proficiency and promoting learner motivation resulted in it being selected in a modified form for trial in the EFL reading course being examined in this study. The institution in

which this study took place was an engineering university in Japan where students were perceived to be reluctant EFL learners in need of more motivationally stimulating curricular content. The trial course was structured around the use of graded readers in conjunction with the Moodle Reader Module; an optional add-on to the open-source Moodle course management system consisting of quizzes for thousands of graded readers from all major ELT publishers. In this semester-long trial EFL reading class students were required to check graded readers out of the school library, and then take quizzes on a weekly basis in the school's computer lab. Students were evaluated on the total number of words read from quizzes that were successfully passed. The present study describes the results of a formal retrospective evaluation of the materials used in the course. It was hoped that this formal evaluation would provide insights into the value of such a program, and into how it might be improved in the future. The following research questions are reflective of these overall goals:

RQ1: How did the use of graded readers and the online evaluation system affect learner motivation?

RQ2: How did learners generally perceive the use of graded readers and the online evaluation system?

RQ3: How did the characteristics of specific graded readers affect their appeal to students?

## **Methods**

### **Data collection and analysis**

Data collection for this study was carried out with a questionnaire comprised of an adapted version of Keller's (2010) Instructional Materials Motivational Survey and additional open-ended items (see Appendix 1). The IMMS was originally designed to measure attitudes, relevance, confidence, and satisfaction components of instructional materials according to Keller's ARCS

model of motivation. Since its creation, the instrument has proven to be flexible enough to be adapted and used to evaluate instructional materials across a wide range of settings and disciplines (Bollinger, Supanakoorn, & Boggs, 2010; Corbalan, Kester, & Van Merriënloer, 2009; Jakobsdóttir & Hooper, 1995; Pittenger & Doering, 2010; Rodgers & Winthrow-Thorton, 2005). The questionnaire designed for the current study retained the four main variables of the original IMMS, but the items were rewritten and scales adjusted to better assess the specific characteristics of graded readers. This adapted version of the IMMS was piloted with a sample of thirty ( $n=30$ ) students at the same institution where the main study was targeted to take place. Cronbach's Alpha for each scale indicated good internal reliability (Confidence:  $\alpha=.75$ , Attention:  $\alpha=.76$ ; Relevance:  $\alpha=.78$ ; Satisfaction:  $\alpha=.81$ ) according to the .70 threshold suggested by Dörnyei (2003). Due to its satisfactory internal reliability, the IMMS portion was used without further revisions. An additional section of open-ended items was added to the questionnaire in order to obtain learner feedback on their impressions of graded readers and the online system, and the specific characteristics influencing perceptions of graded readers. An open-ended format was chosen for these items due to the range and variability of responses it can elicit. It was hoped that such data would provide deeper insights into the range of impressions and characteristics that contributed to learners' experiences using the graded readers and the online evaluation system.

The questionnaire was administered in the final week of a fifteen-week semester and required approximately ten minutes to complete. A total of 230 questionnaires were collected, of which 219 ( $N=219$ ) were retained for analysis. Questionnaires that were discarded were those that were either incomplete or not appropriately filled out. Of the questionnaires retained for analysis, all had completed IMMS sections, while open-ended items were filled out selectively by participants. IMMS results were then entered into Predictive Analytics Software (PASW) version 18 to derive descriptive and inferential statistics. Open-ended item responses were translated into English, and responses to each item were coded and separated into themes. Following first round coding, themes were

revised and re-organized with input from a colleague.

## Participants

All participants were second-year Japanese engineering majors with specialties in chemical and mechanical engineering. A total of 230 (n=230) students filled out questionnaires, although the data represents responses from 219 (N=219) completed questionnaires. The participants were of mixed English ability, although the majority was at a low intermediate reading level. The reading class represented one of eight mandatory EFL classes students were required to complete as part of their general humanities requirements for their Bachelor of Engineering degrees.

## Results

### IMMS scales

Results of the IMMS indicated positive overall endorsement of the four scales used in the questionnaire. The most highly endorsed scale was Satisfaction (SAT), with a mean of 3.41 derived from the five-point Likert scale items. This was followed by Confidence (CON) (M=3.32), Attention (ATT) (M=3.29) and Relevance (REL) (M=3.20). The Cronbach's alpha for each scale (CON  $\alpha$ =.667; ATT:  $\alpha$ =.78; REL:  $\alpha$ =.78 and SAT:  $\alpha$ =.79) indicated good internal reliability for each. While SAT was the most highly endorsed overall, its average range of 2.86 to 3.86 indicates a range of variability in responses.

Table 1: Graded reader IMMS scale summary

	n of items	n	$\alpha$	m	min	max	range	variance
CON	7	219	.667	3.32	3.04	3.61	.571	.053
ATT	10	219	.807	3.29	3.04	3.61	.580	.044
REL	7	219	.784	3.20	2.71	3.45	.744	.056
SAT	6	219	.792	3.41	2.86	3.83	.968	.143

Results of individual IMMS items are provided in Table 2. The two most highly endorsed items were from the SAT scale (SAT5 m=3.83; SD= .99; SAT 6

m=3.75; SD=.98), this was followed by the confidence item CON4 (m=3.61 SD=1.01) and the attention item ATT5 (m=3.61; SD=0.97). The four least endorsed items were REL3 (m=2.71; SD=.95), SAT2 (m=2.86; SD=1.06), ATT8 (m=3.03; SD=0.81) and CON2 (m=3.04; SD=1.02).

Table 2: Graded reader IMMS item summary

	n	M	SD	var.	item response frequency (%)				
					1	2	3	4	5
CON1	219	3.25	1.03	1.07	5.5	15.1	40.2	26.9	12.3
CON2	219	3.04	1.02	1.04	8.7	15.5	46.6	21.0	8.2
CON3	219	3.15	1.04	1.08	6.8	18.3	35.6	30.6	8.7
CON4	219	3.61	1.01	1.03	2.7	12.3	24.7	41.1	19.2
CON5	219	3.58	0.92	.849	2.7	7.3	32.9	42.5	14.6
CON6	219	3.14	0.78	.621	2.7	15.5	47.0	33.8	.90
CON7	219	3.46	0.98	.974	3.7	11.0	35.2	36.1	14.2
ATT1	219	3.18	1.02	1.05	5.9	18.7	34.2	32.9	8.2
ATT2	219	3.13	0.99	.996	6.4	17.8	38.8	30.1	6.8
ATT3	219	3.32	1.03	1.06	6.8	10.5	37.0	34.7	11.0
ATT4	219	3.57	0.96	.924	2.7	9.1	32.4	39.3	16.4
ATT5	219	3.61	0.97	.953	2.3	11.4	26.0	42.9	17.4
ATT6	219	3.07	0.94	.898	6.4	17.4	42.9	28.8	4.6
ATT7	219	3.31	1.02	1.04	5.9	12.3	37.4	33.3	11.0
ATT8	219	3.03	0.81	.668	4.6	16.0	52.5	25.1	1.8
ATT9	219	3.15	0.92	.857	4.6	16.0	45.2	27.9	6.4
ATT10	219	3.50	0.96	.939	3.7	7.8	38.4	34.7	15.5
REL1	219	3.29	0.99	.988	5.5	14.6	32.9	39.3	7.8
REL2	219	3.45	0.92	.864	2.7	10.5	37.0	37.9	11.9
REL3	219	2.71	0.95	.921	12.3	25.6	42.5	17.8	1.8
REL4	219	3.23	1.02	1.04	5.5	17.8	32.9	35.2	8.7
REL5	219	3.16	0.86	.743	4.6	13.2	46.6	32.4	3.2
REL6	219	3.32	0.95	.917	4.1	11.9	42.0	31.5	10.5
REL7	219	3.27	0.85	.732	2.7	13.2	42.9	36.1	5.0
SAT1	219	3.60	1.08	1.18	5.0	11.0	23.3	39.7	21.0
SAT2	219	2.86	1.06	1.12	11.0	24.7	37.9	20.1	6.4
SAT3	219	3.27	1.04	1.10	5.5	16.0	36.1	30.1	12.3
SAT4	219	3.15	0.97	.942	5.5	16.0	43.4	27.4	7.8
SAT5	219	3.83	0.99	.985	1.8	7.8	24.7	37.0	28.8
SAT6	219	3.75	0.98	.966	2.3	8.2	25.1	40.6	23.7

### Correlations between scales

The direction and strength of relationships between scales was investigated using Pearson product-moment correlation coefficient. Results indicated positive correlations between all scales (Table 3), with correlations falling between the  $r=.50$  to  $r=1.0$  range being indicative of a strong positive

relationship (Cohen, 1988). These findings reflect the high correlational relationships between IMMS scales observed in other studies (Keller, 2010).

Table 3: Pearson product-moment correlation between GR-IMMS scales

	1	2	3	4
1. SAT	--	.640**	.713**	.573**
2. REL		--	.774**	.591**
3. ATT			--	.733**
4. CON				--

\*\*p<.001(2-tailed)

### Open-ended item results

#### Overall impressions of graded readers

The first open-ended question was: “How did you feel about using graded readers?” A total of 196 responses were received for this item. The majority of responses were positive (74%: n=149), while 27, or 13.7%, were negative. The remainder of responses were either mixed (n=12: 6.1%), with students expressing mixed positive and negative feelings, or ambivalent (n=8: 4%), with such participants expressing that they had no particular feelings using graded readers.

The overwhelmingly positive results produced a number of specific reasons why graded readers and the online reading course were perceived positively by learners. The most frequently (n=22) cited positive reason was the level of improvement students experienced. Sample responses from this category included: “It was very difficult at the beginning, but I got better at reading from the middle of the semester” (S63). This was followed by the selectivity aspect of the course (n=21), where learners expressed positive feelings about being able to choose their own books. An example of this kind of response was “I thought it was good, choosing books that matched my interest and level” (S110). Receiving the same number of responses (n=21) was “enjoyment”, with learners stating that using the graded readers was an enjoyable experience. A sample of this type of

response was “It was really fun, I enjoyed reading the books, all the different kinds of stories” (S59). The next most frequent positive response category was “confidence” (n=18) where participants described increasing confidence the more they read, and in some cases, the more quizzes they passed. Two examples of this type of response were “I had absolutely no confidence in English, but this class really made me feel I can read because I could read a lot at my level. My confidence went up” (S20), and “It was difficult at the beginning, but I gained confidence the more I read. Passing the quizzes gave me confidence” (S73). These examples indicate that both reading and taking the online quizzes positively influenced learners’ confidence. The novelty factor of the online reading class was also a positive factor for learners, with fourteen (n=14) describing this style of class as a new and unique experience. An example of this sort of response was, “it was a new style class, I really haven’t had the chance to read English books, so I thought this was a good experience for me” (S80). The next most frequently provided response was “other transformation” (n=13), which describes other types of personal transformation that occurred in learners beyond the changes in improvement and confidence described above. Such transformations included an increased interest in reading: “I tried hard to get the word count I needed, but I found I became more and more interested in the books and reading the more I read” (S179), or an increase in interest in English in general: “At first I didn’t want to do it, but after reading some books, now I feel I’m more interested in English” (S44). The next most frequent response was “learning appeal” n=12, with learners describing a positive impression of how the class appealed to their learning style preferences. An example of this type of response was: “I thought this was a good way to learn, on my own and naturally” (S185). Similar, but more focused on the general class organization, were responses in the “class style” (n=10) category. A sample of this kind response was: “Reading on my own and taking tests, and passing the tests online, was really interesting”(S32). Some students positively perceived the value of texts in promoting specific skills (n=8), as seen in this response from Student 78: “I saw words I didn’t know over and over so I thought I learned them well”. The tenth most frequent response type was “opportunity”

(n=8). This category included responses that described using graded readers as an opportunity or chance to learn English through reading. This sort of response included: “I’ve wanted to read more in English, so this was a good opportunity for me experience reading and learning English in a different way” (S162), and “I like reading, so this was a good chance for me to study English while reading” (S79). A number other positive responses (n=22) were provided, including the ability to read exclusively within one’s range of interests, the perceived utility of reading for general English abilities, and the inherent challenge posed by words count goals.

Table 4: Open-ended item 1: Summary of positive & negative responses

<b>Positive (n=149)</b>	<b>Negative (n=27)</b>
improvement n=22	Difficult n=15
level choice n=21	Didn’t like class styles: n=7
enjoyment: n=21	No interested in, don’t like, English 5
confidence: n=18	
novelty n=14	
personal transformation n=13	
learning appeal n=12	
class style n=10	
promote specific skills n=8	
opportunity n=8	
other positive responses n=22	

There were comparatively fewer negative responses (N=27) to the first item. The most common type of negative response came from those who found the graded readers difficult (n=15). Examples of this sort of response included “I’m not interested in reading in English so it wasn’t interesting for me, reading those books was difficult” (S110), and “It was too difficult to read every week” (S135). The second most frequent (n=7) type of negative response came from those who didn’t like the class style. An example of this type of response was, “This kind of class was a pain, I’d prefer a normal class more” (S22). The third type of negative response came from those who had no interest in, or disliked, studying English (n=5). These feelings extended into the use of graded readers, as seen in this response from Student 27, “I don’t really like English so I didn’t like doing it (*reading and the online quizzes*) at all”.

## Preferred graded reader types

The second open-ended item asked students which types of books they preferred using. Participants identified readers they liked according to their particular content features, genre, structural or lay-out characteristics, and publisher type or series (see Table 4). The five most frequent responses from each category will be discussed below.

The most frequently identified type of reader preferred was that with content features that appealed to learners. Students particularly liked books that they perceived to be easy (n=38). Students also identified readers that matched their personal interests (n=28) as being particularly appealing. Students mentioned graded readers with stories or themes involving such topics as soccer, opera, chess, and airplanes as being particularly appealing due to their appeal to their specific interests. The third most frequently cited content feature that appealed to learners was familiarity in terms of story content (n=22). With such responses learners mentioned particularly liking reading stories they already knew such as Huckleberry Finn or Sherlock Holmes as it was easier for them to self-monitor their understanding of the story. The next most frequently cited content features liked by learners were daily life (n=7) and understandability (n=7). Regarding the former, daily life content was described as stories which describe day-to-day activities such as work or school in other countries. The latter, understandability, described storylines, particularly character interactions, that were easy to follow.

Table 5: Open-ended item 2: Attributes of preferred readers

<b>Content features (n=124)</b>	<b>Genre (n=79)</b>	<b>Characteristics (n=36)</b>	<b>Publisher (n=11)</b>
easy (n=38)	movie (n=20)	pictures (n=13)	Foundations (n=7)
matched interests (n=28)	fiction (n=12)	short (n=6)	MacMillan (n=2)
familiar (n= 22)	mystery (n=11)	word count (n=5)	Penguin (n=2)
daily life (n=7)	non-fiction (n=8)	long (n=4)	
understandable (n=7)	biographies (n=5)	variety (n=4)	
famous (n=6)	fantasy (n=4)		
dialogues (n=5)	traditional (n=4)		
moving (n=5)	history (n=4)		
funny (n=4)	Japanese (n=3)		
good flow (n=2)	thriller (n=3)		
	science fiction (n=3)		
	romantic (n=2)		

Genre was the second most frequently cited attribute of graded readers contributing to their likability. Movie-related graded readers (n=20) were the most popular with students, with a number indicating that they liked being able to check comprehension and compare movie-based graded readers with movies they had previously watched, or alternatively, to watch movies after reading to check their comprehension. The second most frequently cited genre was fiction (n=12), with students explaining that they liked following stories and their plots. This was followed by mystery-themed graded readers (n=11), about which learners expressed a keen interest in trying to solve the mystery as they read. The fourth most popular genre was non-fiction (n=8). Within this category learners described books about real places, businesses and events as particularly valuable in providing knowledge. The fifth most preferred genres was biographies (n=5). Learners expressed interest and excitement in reading details about famous people's lives. Like non-fiction books, biographies appeared to appeal in terms of their inherent interest as well as their general knowledge value.

Participants also described preferred graded readers in terms of their specific layout or design features, classified here as "characteristics". A number of students (N=13) identified pictures or illustrations as playing an important role in influencing their degree of enjoyment with readers. Student 87 even went as far as identifying what he perceived to be the optimum number of pictures a graded reader should have, "...if there were pictures every two pages or so, it really made the book more interesting; I could use the pictures to imagine the story". Another important characteristic was length, with both short (n=6), and long (n=4), books appealing to different students. Those who liked short books liked being able to reading them quickly and effortlessly, and being able to complete their quizzes easily on the Moodle Reader system. Those who preferred longer readers described enjoying following the flow and development of more drawn out stories and characters. A number of participants (n=5) also identified the printed word count on the backs of books as a characteristic that contributed to their enjoyment of graded readers. Such students explained that choosing books according to their word count allowed them to set weekly goals and read according to their own

schedules. A final characteristic positively affecting students' impressions of readers was their variety (n=4); that is their distinct visual appeal and presentation from book to book, series to series, and publisher to publisher. Students who identified this characteristic described enjoying going to the library and choosing from a wide variety of book covers and surveying the layout, content and presentation of readers prior to selection.

A number of students also identified preferred books by specific publishers. The most popular books type in this category were those in the Cengage Foundations series (n=7). Graded readers from other publishers specifically identified by learners were those from MacMillan (n=2) and Penguin (n=2). Where graded readers from these specific publishers were identified, participants did not add any explanatory insights into why such series were preferred, although it is likely that such books represented the preferred content features, genres and characteristics identified above.

### **Disliked graded reader types**

The third open-ended item asked participants what types of graded readers they disliked. The same three categories as above emerged, although with a slightly different order of frequency: content features (n=54), reader characteristics (n=34), and genres (n=24). The content characteristic most frequently cited as having a negative effect on learners' perception of graded readers was "hard to follow" (n=20). Learners explained that readers with storylines that were difficult to follow, had too many characters, or dialogue that was hard to attribute to specific characters, contributed to negative impressions of particular readers. The second most cited disliked reader characteristic was "difficult" books (n=17). A number of learners explained that they didn't like books that were more difficult than they anticipated, and felt frustrated when this difficulty resulted in them not being able to pass the reader's online quiz. Another content characteristic that negatively influenced learners' impressions of particular graded readers was their perceived degree of "darkness" (n=7). Dark stories were described those as being violent, morbid, or depressing. An equal number of participants (n=7) disliked readers they perceived to be "uninteresting". Such

students explained that both readers that did not match their own interests, as well as those seemed dull, were particularly disliked. Unfamiliarity was another characteristic that negatively influenced learners' perception of particular readers. Students explained that a lack of familiarity with particular stories and situations made it more difficult to contextualize and follow some stories.

Table 6: Open-ended item 3: Attributes of disliked graded readers

<b>Content Features (n=54)</b>	<b>Characteristics (n=34)</b>	<b>Genre (n=24)</b>
hard to follow n=20	insufficient pictures n=9	biographies n=5
difficult n=17	short / low level n=9	history n=4
dark n=7	long n=8	non-fiction n=4
uninteresting n=7	tight layout n=7	mystery n=3
unfamiliar n=3	too many pictures n=1	traditional n=3
		horror n=3
		romance n=2

Learners also disliked graded readers with particular layout or design characteristics. Within this category the most disliked feature (n=9) was a lack of pictures or illustrations. Participants who disliked such books explained that they were harder to engage and follow without pictures related to the story. Receiving the same number responses (n=9) were graded readers which were too easy or too short. Students who disliked this kind of graded reader explained that such books were so underdeveloped, and had such low word counts, that they were perceived to have essentially no real value. A similar number of students (n=8) identified long books as being among those they disliked. Reasons cited for this were the difficulty in staying focused over their length and in passing their online quizzes. A further characteristic of books that was evaluated negatively was “tight layout”; these were described as readers with lines that were too close together. Participants explained that pages with a tight layout were hard on their eyes and difficult to read.

Participants also described a dislike for graded readers of particular genres. The most frequently cited disliked genre was biographies (n=5), which some learners described as not being as well-developed or interesting as fiction. These same reasons were also cited by a number of students who disliked historical (n=4) and non-fiction (n=4) genres. In both cases several learners also

described a preference for fiction. Other genres identified as disliked were mystery (n=3) due to the difficulty of following some of the stories, traditional stories such as fables and folk tales (n=3) due to their uninteresting stories, and horror stories (n=3) due to their dark or unsettling content.

## **Discussion**

The first goal of this study was to evaluate how the use of graded readers and the Moodle Reader module affected learner motivation. The overall positive endorsement across each of the adapted IMMS scales indicated that the readers and the online graded reader course were viewed positively by participants. As these scales represent major cognitive variables contributing to motivation, this result is a positive indication that learners' motivation likely benefited from using these instructional materials and this course design. A particularly encouraging finding within the scales was the high endorsement of the confidence items. This endorsement, combined with students' strong preference for easy books as revealed in the open-ended item results, suggests that self-selection of books according to self-perceived ability supported students' learning confidence. Self-efficacy is a key component for initiating and sustaining learner motivation in that learners who think they will be successful are more likely to initiate and carry through with positive learning behaviors (Pintrich & Schunk, 2002). Self-selected graded readers appear to engender confidence in learners, and for this reason alone should be recommended for use with this group of learners. As a number of studies have indicated low levels of confidence in Japanese EFL learners (see Johnson 2009), this finding represents an important direction in facilitating more positive attitudes and behaviors in the EFL classroom.

The second goal of this study was to identify how learners perceived using the graded readers and the online evaluation system. Speaking directly to this question, the results of first open-ended item indicated that almost three quarters of learners perceived the course positively. While a variety of explanations were provided for these positive impressions, the most frequently cited reasons were improvement, level choice, enjoyment, and novelty. Learners felt they improved in reading, or in their overall English ability, through taking

this course, a positive outcome that aligns with other studies (Bell, 2001; Constantino, 1995; Horst, 2005; Horst, Cobb & Meara, 1998). Other students cited the self-selection of reader level as a positive aspect of the course. This is important as learners appear to feel more comfortable with the proficiency level of self-selected instructional materials, and the selection process stands to potentially increase learners' sense of investment, or stake, in the learning process. Students additionally cited a general feeling of enjoyment as a reason for liking the course. Such responses suggest that graded readers may be a means for promoting more intrinsically-oriented motivation in learners. Particularly considering Japanese engineering students more extrinsic, instrumental or utilitarian orientations towards English studies (Kimura, Nakamura & Okumura, 2001), this finding may indicate that specific types of instructional materials might have a positive influence on expanding motivational orientations. A further attraction of the course cited by learners was its novelty appeal, with a number of learners citing the uniqueness of this learning experience as appealing. As most of the learners' prior EFL learning experiences were characterized by traditional teacher-centered classrooms, their willingness to embrace a more student-centered and autonomous learning approach is an encouraging finding.

The final goal of this study was to identify which types of graded readers learners liked and disliked using. The number of types of graded readers identified as being "liked" was over twice as many as those "disliked". This finding provides some important insights into learner preferences. First, the range of responses, with 30 specific types identified across four thematic areas, speaks to the variability of preferences in learners. This range demonstrates that EFL programs utilizing graded readers need a wide selection of titles in order to meet the varying interests and learning style preferences of learners (Day & Bamford, 1998; Murphy, 1987). Regarding the specific types of graded readers learners liked and disliked, it was observed that content, genre and layout characteristics were important in determining learner preferences. In both positive and negative evaluations, content types were cited most frequently, with "easy" books being liked, and "hard to follow" or "difficult" books being disliked. This general

preference for easier books aligns well the general goal of extensive reading approaches, which is to have learners embrace books that are easy to read and which are effortlessly assimilated (Day & Bramford, 1998). Additionally, returning to the discussion of confidence above, reading easier books is a good way for Japanese EFL learners to regain, or develop, confidence in English learning. The findings above speak to the importance of providing learners with guidance in selecting graded readers appropriate to their level; participants voiced displeasure with inadvertently chosen books that turned out to be too difficult, or in some cases too easy, for them. More specific directions on how to choose appropriately-leveled readers would likely promote confidence and lessen such frustration in learners.

Learners also identified preferred graded readers by genre. The range of genre types liked (n=12), and disliked (n=7), which were at times conflicting, are yet another indicator that a broad range of readers need to be acquired to meet the array of preferences in learners. This is also true of learner preferences in regard to graded reader types characterized by their layout characteristics. Learners variously identified preferences and dislikes of reader types according to their having pictures or not having pictures, being short or too short, and easy or too easy. These conflicting preferences and dislikes suggest that a wide range of graded reader series with different layout characteristics from a number of different publishers is necessary to appeal to the differing preferences across learners.

## **Conclusion**

This study revealed a number of benefits associated with the use of graded readers in conjunction with the Moodle Reader Module. The overall positive endorsement of GR-IMMS satisfaction, confidence, relevance, and attention scales indicated that the use of graded readers and the online evaluation system appealed cognitively to learners in a manner that supported motivational engagement. The open-ended items supported these findings with learners expressing satisfaction with the improvement they achieved in the course, greater

confidence from using self-selected readers according to perceived proficiency levels, increased perceived relevance derived from the selection of content congruent with personal interests and learning style preferences, and heightened attention due to a combination of factors including the novelty of learning and engaging English in new manner. Combined, these findings suggest that graded readers and autonomous online evaluation provided this sample of Japanese engineering students with a motivating EFL learning experience.

Despite these positive findings, the limitations of this study need to be acknowledged. The situation-specific nature of evaluating learners' motivational orientations toward a particular set of instructional materials or a specific course design may limit the generalizability of the results. For more generalizable findings, a broad multi-institutional study would need to be conducted. Those interested in examining how their own learners might respond to a similar course would be urged to pilot a course and conduct an independent retrospective evaluation of the materials and course design used.

The benefits of using graded readers and autonomous online evaluation systems such as the Moodle Reader Module provide a ray of hope for those in search of curricular alternatives for reluctant EFL learners such as Japanese engineering students. Through expanded use and further empirical inquiry it is hoped that these materials and approaches will demonstrate their potential as a source for motivating EFL learners.

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## Appendix 1

### **Part1: Graded Reader IMMS Items and Scales**

#### Confidence

CON1: When I looked at the books, I had the impression that they would be easy.

CON2: The books were more difficult than I would like.

CON3: The more I read, the more confident I became with reading in English.

CON4: I could not understand many of the books I chose.

CON5: Choosing books at my level gave me confidence.

CON6: Reading the books gave me confidence in my overall English ability.

CON7: Passing the quizzes gave me confidence.

#### Attention

ATT1: The books are eye catching.

ATT2: The content of the stories helped hold my attention.

ATT3: The books were so difficult to understand it was hard to keep my attention.

ATT4: The books were dry and unappealing.

ATT5: The leveling of books helped me focus my attention.

ATT6: The content of the books helped stimulate my curiosity.

ATT7: There was not enough variety in the books available.

ATT8: I learned something interesting while reading.

ATT9: The variety of books helped keep my attention.

ATT10: Choosing books that interested me helped focus my attention.

#### Relevance

REL1: The content of the books were relevant to my interests.

REL2: The graded readers are worth reading.

REL3: I could relate the content of the books to things I have seen, done, or thought about in my own life.

REL4: The English content of the books will be useful for me.

REL5: I learned some valuable things reading the books.

REL6: The books were not relevant to my needs.

REL7: The content of the books is valuable.

#### Satisfaction

SAT1: Completing the books gave me a feeling of satisfaction.

SAT2: I enjoyed the books so much I would like to read more in the future.

SAT3: I really enjoyed reading the books.

SAT4: It was a pleasure using the online learning system.

SAT5: It was satisfying watching my word count rise.

SAT6: Passing the quizzes gave me a feeling of satisfaction.

### **Part 2: Open-Ended Items**

1. How did you feel about using the graded readers in this class?
2. What types of books did you enjoy reading? Why did you like them?
3. Where there any types of books you did not enjoy reading? Why did you dislike them?

**AVAILABILITY AND USE OF INFORMATION AND COMMUNICATION  
TECHNOLOGY FACILITIES FOR COUNSELING UNIVERSITY UNDERGRADUATES  
IN SOUTH – WEST GEO – POLITICAL ZONE, NIGERIA.**

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FACILITIES FOR COUNSELING UNIVERSITY UNDERGRADUATES IN SOUTH – WEST  
GEO – POLITICAL ZONE, NIGERIA.**

**ABSTRACT**

*The study investigated the availability and use of Information and Communication Technology facilities for counseling university undergraduates in South West Universities, Nigeria. The respondents comprise of 19, 500 undergraduates drawn from the thirteen (13) universities in the South – West Geo Political Zone, Nigeria. The instrument used for data collection for the study was validated by two experts in Guidance and Counseling; One from Osun State University, Osogbo and the second one from University of Lagos, Akoka, Lagos State. A test – re – test method was used to determine the reliability of the instrument, reliability co – efficient of 0.79 was obtained. Data collected were analyzed using simple percentage and mean scores. The findings of the study revealed that information and Communication Technology (ICT) facilities for counseling are not adequate in the Universities in South – West Geo – political Zone of Nigeria. The finding also shows that the level of information and Communication Technology usage in the Universities in South – West, Nigeria is very low. Based on the findings of the study, it was recommended that University Management should create counseling laboratories; Government should make provision for*

*ICT facilities in the Counseling laboratories in order to curb/eradicate social vices among undergraduates and to help facilitate counseling and learning.*

**Key words:** Availability, ICT, Counseling, University, Undergraduates, South – West, Nigeria.

## INTRODUCTION

Onwumere (2008) defined information and communication technology as “the collection, storage, processing, dissemination and the use of information in a more scientific manner” Ezekoka (2007) believes that “ICT is an intermingling of Information and Communication Technology”. While information can be seen as ideas conceived by the human mind, information technology is the storing of such ideas that need to be communicated with the use of science products. Counseling is designed to provide an interacting relationship where the counselor is attempting to help a student to better understand him/herself in relating to his/herself present and future decisions or problems (Makinde 1983). And according to Blocher (1974), counseling is helping an individual to become more fully aware of himself and the ways in which he is responding to the influences in the environment.

Counseling involves interaction between counselor and clients or group of clients; therefore, for any meaningful interaction to take place there is need for information dissemination and effective communication. With the advent of information technology in the world, a new dimension of information processing and communication modes were embraced in counseling especially now that the world has become a global village through the use of information and communication technology facilities. The internet has become the easiest way for information accessment and dissemination among youth. Vanttornx Myrick (2001) suggested that the work of counselors in the areas of distance learning, college and career searching, counseling interventions, training and supervision, networking and support systems, and information retrieval and dissemination is affected by technology.

Nowadays people live in a technology driven society in which advance technology continues to influence all aspects of peoples' in the schools, at home and in the field of work. Internet and electronic mail are widely used by people in the world especially the youth for collection and dissemination of information .Information technology has been accepted by many societies as the way the world is going (D1, 200, Onuora, Oguno & Nyuykenge 2010). Information Technology become the pillar of development and

interaction and the whole world become a global village today with high invention of technology tools, high speed networks, and fast paced digital exchanges are more an intricate part of our society than ever before (Friedman, 2005).

Information and communication technology facilities make interactions easier and facilitate productivity. According to Januszewkix Molenlda (2008), information and communication technology is the practical offshoot of education technology which by definition is the study and ethnical practice of facilitating learning and improving performances by creating, using and managing appropriate technological processes and resources.

Counseling as an educational process used in solving problems of learner requires the use of information and communication technology facilities to make counseling more effective and productive among the undergraduates that are versatile in the use of different ICT facilities and social networks. Based on this, the use of ICT based counseling will go a long way to enhance the interaction between counselors and undergraduates. Rai (2006) believed that technologies are the tools that people use to share, distribute, and gather information to communicate with one another, one on one or in groups, through the use of computer and interconnected computer networks. This shows that, for interaction to be more meaningful these days there is need to make use of ICT facilities.

Green, Lawson and Getz (2005), and Patrick and Flanagan, (2008) believed emails can aid correspondence between counselor and client; web searches and internet sites can provide client additional information a problem; while employment counselors can expand client's job searches by searching on the internet.

Leach and Moon (2002) summarized the importance of ICT to include: critical thinking, information handling skill, problem solving, the refining of understanding, the giving and receiving of prompt feedback; collaborative task, joint decision making and reflection; higher level of conceptualization; complex group interaction.

The main challenges of the various channels of counseling these days is the selection of appropriate channel of communication which delivers clearly, accurate and quality

information as desired by the counselors without any distortion (Okopi,2010). Sabella and Broker (2003) suggested that using technology may have many potential advantages, such as the ability for information to be instantaneously updated and received by all stakeholders in cost effective manner, enhance collaboration capabilities and the ability to present visually appealing, informative and creative presentations. This study is pertinent especially in the wake of increasing need for making ICT based counseling available and accessible to the undergraduates who are still in their youthful age.

To guide the conduct of the study, the following research questions were raised:

1. Do undergraduates in South- West Universities have access to ICT based counseling?
2. Do undergraduates in South- West Universities have adequate knowledge of ICTs based counseling?
3. Do counselors in South -West Universities use ICT facilities for counseling undergraduates?
4. How do undergraduate perceive ICT based counseling in South- West Universities?

Method:

Design: This study adopted the mixed methods research approach. Mixed method is defined as the class of research where the researcher combines qualitative and quantitative techniques into a single study (Johnson & Onwugbuzie 2004). Both qualitative (interpretivism) and quantitative (Positivism) approaches were used to advantage in this study. The study's research questions comprised both the "what" (Positivist) and "why" (interpretivist) questions. The questions which were asked to establish undergraduates' accessibility to ICT based counseling were purely objective and hence positivist. However, the questions "to what extent do you perceive" were subjective in nature due to the fact that participants had to express their perceptions about the efficacy of ICT based counseling and also Justify their perceptions, participants have to express their views, opinions as well as their feelings about ICT based counseling in the university.

**Participants and setting:** The population of this study comprised all undergraduates in the south-west Geo political zone in Nigeria. The study participants comprised 19,500 randomly selected undergraduates from the thirteen (13) universities in South-West Geo political zone in Nigeria. The sample was stratified on the basis of gender, age and class level.

**Instrument:** The participants completed the ICT based Counseling Questionnaire which consists of two sections. Section A, sought demographic information of the respondents while section B was geared towards eliciting information from the respondents on their accessibility to ICT based counseling, their ability to use the computer, whether ICT based counseling is available in their institution and their perception to utilization of ICT based counseling in their institution.

Requesting experts in their related field of study to vet the instrument established content validity. The reliability of the instrument was established through Cronbach alpha reliability technique with a co-efficient value of 0.74. This lends credence to the suitability of the instrument for the study.

**Procedure for data collection:** A combination of administered questionnaire and focus group discussions (FGDS) was used for data collection exercise. The questionnaire consisted of a combination of close and open-ended questions. Focus group discussions produce descriptive data about peoples' own written or spoken and observable behaviour.

**Ethical Considerations:** The researchers were available to explain the purpose of study, the consent and voluntary nature of the study, the intended use of the findings, including reporting through publications and other methods and the necessary steps that the researcher will take in maintain the participants' confidentiality.

**Method of Data Analysis:** The data that was both quantitative and qualitative in nature. The two main procedures were, therefore, applied in the analysis of the data in line with mixed research approach adopted for the study. Quantitative data gathered from the close-

ended questions were subjected to NCCS 2007 quantitative method of data analysis. (NCCS can perform a variety of data analysis and presentation functions, including statistical analysis and graphical presentation of data).

The qualitative were subjected to content analysis. This involved sorting, categorizing and tallying the data which were mainly additional information to or justification of response given to the close-ended questions, in line with the mixed-model design. For some of the questions, the presentation was then done in narrative form.

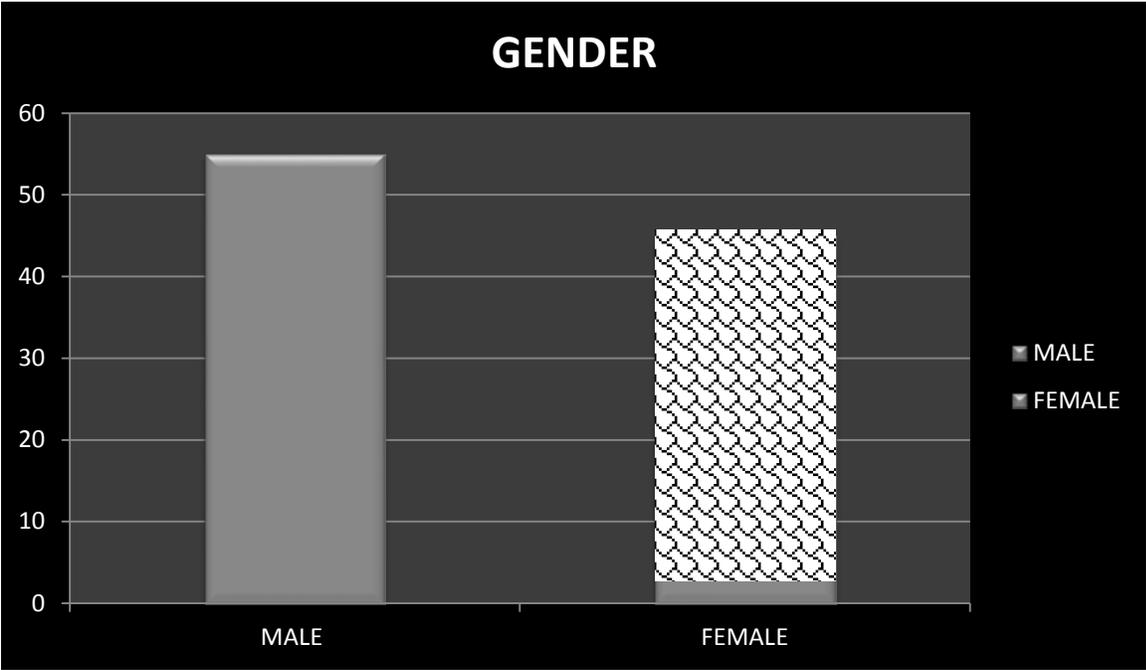
#### Results:

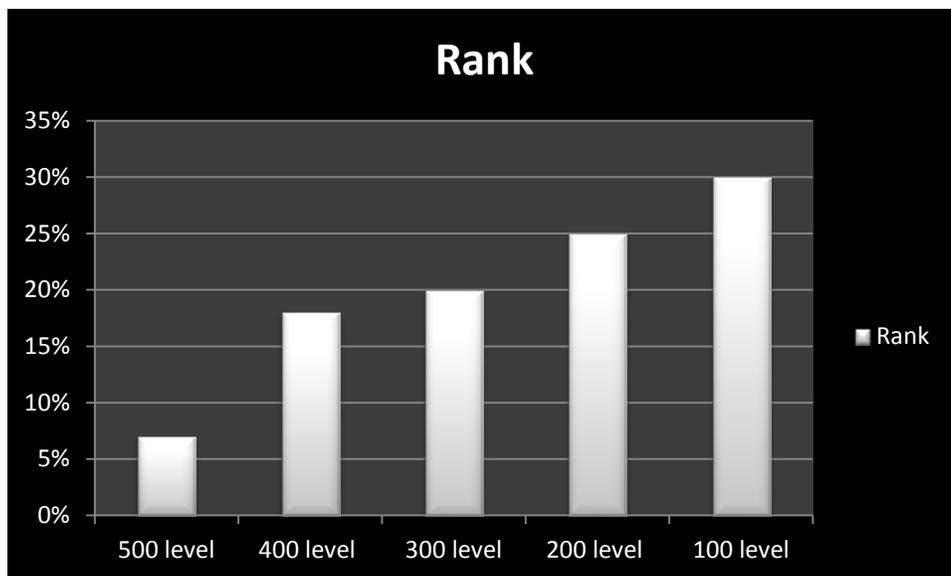
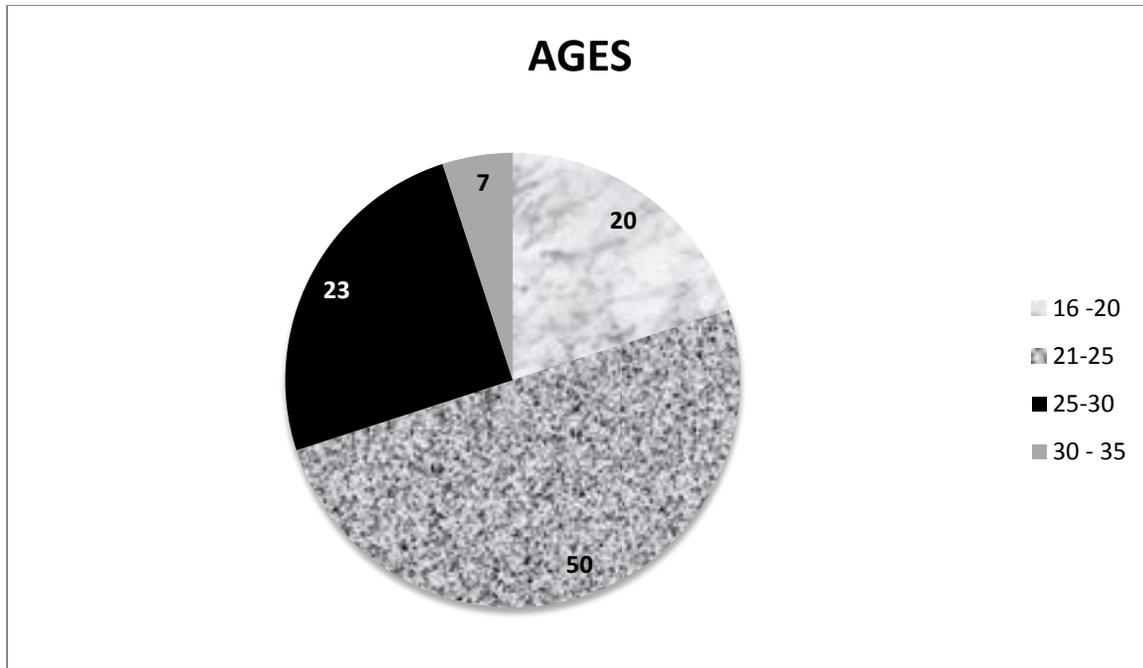
The demographical characteristics of the respondents are presented first before the presentation of findings related to the problem of the study.

Table 1: Distribution of the Respondents on the Basis of Gender, Age and Rank.

Variables	Frequency	Percentage
Gender		
Male	10,725	55%
Female	8,775	45%
Age		
16-20	3,900	20%
21 – 25	9,750	50%
25 – 30	4,875	25%
30 – 35	975	5%
Class Level:		
500 Level	1,365	7%
400 Level	3,510	18%
300 Level	3,900	20%
200 Level	4,875	25%
100 Level	5,850	30%

Table 1 represents the demographic characteristics of the respondents in frequency counts and percentage. It shows that 55% of the study samples are males while 45% were females. Fig 2 shows that respondents who fall within age of 21 – 25 years age bracket constituted 50% of the total sample. 500 level students who participated in the study formed 7% of the sample while 400 level and others constituted 43% of the total sample. The bar and pie chart represented described the demographical data of the respondent for the study.





**Question 1:**

**Do undergraduates in South-West Universities have access to ICT based Counseling ?**

**Table 2: Undergraduates ICT's based Counseling Accessibility index in frequent count and percentage.**

S/N	What access do you have to ICT's based counseling?	Frequency	Percentage

1	Cell phone	4,100	21%
2	Personal Laptop And modem	2,440	12.5%
3	Friends Laptop And modem	1,002	5.2%
4	ICT Laboratories in school	518	2.6%
5	School internet facility	2050	10.5%
6	Cybercafé	500	2.6%
7	None	8,890	45.6%

Table 2 Presents Undergraduates accessibility to ICTS based counseling. The Table shows that 54.7 of the respondents had one access or the other to computer based counseling. A breakdown of this figure shows that 21% of the respondents have access to ICT based counseling through cell phone, 12.5% has ICT counseling through personal laptop and modem, 5.2% have access to counseling through friends laptop and modem, 2.6% through ICT laboratories in school, 10.5% have access to ICT based counseling through school internet facility, 2.6% have access to ICT based counseling through cybercafé. 45.3% of the respondents said they have no access to ICTS based counseling. Figure 4 further demonstrates this result thus:

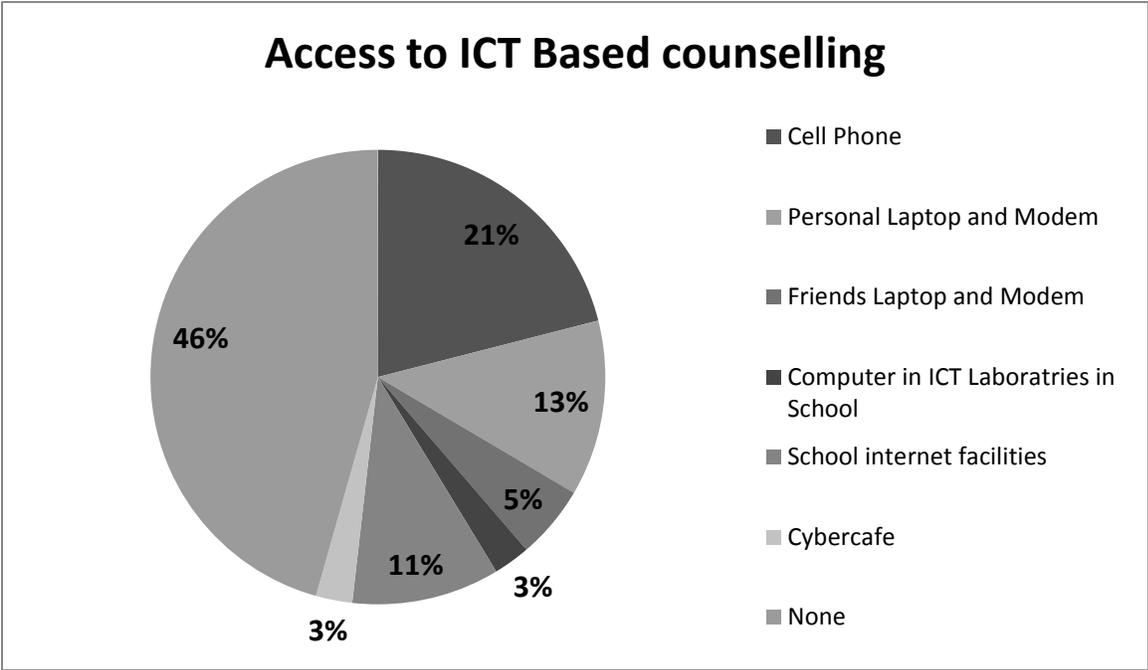


Figure 4: Percentage Distribution of Respondents' ICT Based Counseling Accessibility.

**Question 2:** Do undergraduates in South-West Universities have adequate knowledge of ICT based Counseling?

**Table 3:** ICT Based Counseling Usage Index in Frequency Count and simple percentage.

S/N	How will you rate usage of ICT based Counseling in your institution?	Frequency	Percentage
1	Very High	6,825	35%
2	High	5,850	30%
3	Moderate	3,900	20%
4	Low	1,950	10%
5	Very Low	975	5%

Table 3 Shows the Frequency of the responses by the students indicating their ability in the use of ICT base Counseling. It is interesting that high number of respondents 6,825 (35%) out of 19,500 respondents have very high ability in the use of ICT based counseling 5,850 representing (30%) of the sample size have high ability. 20% of the respondents has moderate ability while only 15% of the total sample has either low or very low ability. Figure 5 further demonstrates this result.

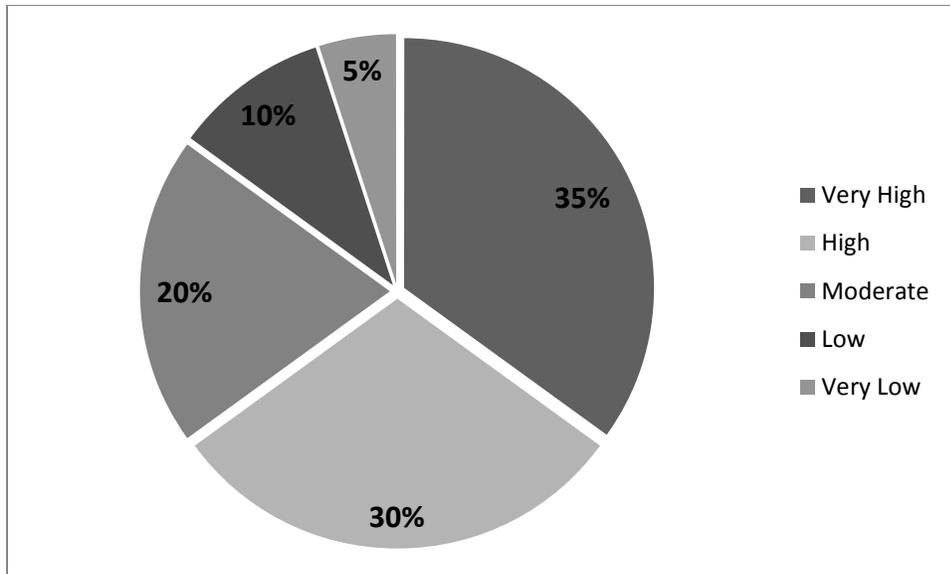


Figure 5: Percentage Distribution of Respondents' Computer Usage Index

**Question 3:**

Do Counselors in South-West Universities employ ICT facilities for counseling undergraduates?

Do you normally receive ICTS based Counseling from Counselors?	Frequency	Percentage
Yes	9,395	48%
NO	10,105	52%
Total	19,500	100%

Table 4 shows that (52%) of the respondents do not receive ICT based Counseling. Only 9,395 Undergraduates representing 48% of the sample have access to ICT based Counseling. Figure 6 depicted the result.

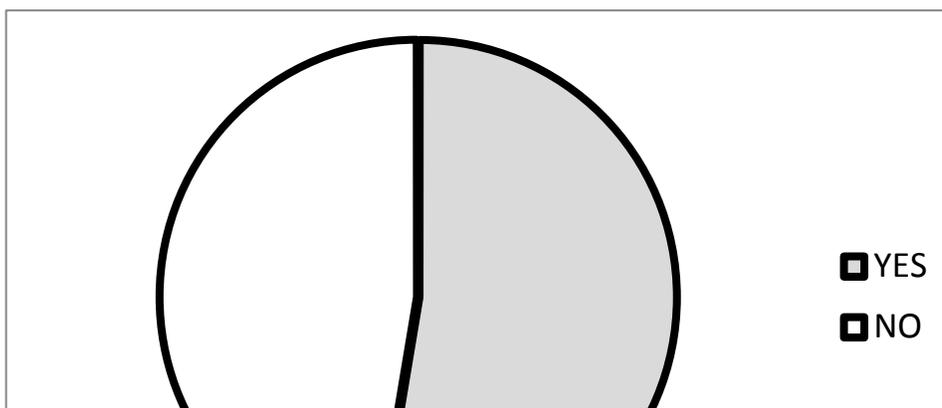


Figure 6: Percentage Distribution of Counselor Employment of ICT Based Counseling.

**Question 4:**

How do you as a student perceive Information Communication Technology based counseling availability in your university?.

Interviews and focus group discussion revealed diverse opinions concerning ICT based counseling in South – West Universities. Some of the undergraduates were of the opinion that ICT based counseling does not exist in their schools; while some said on – line counseling was only meant to give information to new students.

*One respondent remarked.*

*“I have never heard of ICT based Counseling my school, the only counseling office I am aware of the one attached to students’ affair office and I have not visited the place for anything.”*

*Another respondent added.*

*“I am aware of online counseling in my university, but I don’t have anything to do with it because there are always difficulties of connectivity.”*

Yet another added

*“I would have loved ICT based counseling if it is available and counselor will keep whatever we discussed between us- i.e. confidentiality”*

*Other responses include*

*“Even if there is ICT based counseling in my school there is no regular power supply to access it”*

*“Counselors are too busy with lectures than thinking of helping anyone out of challenges face to face. I don’t think they will ever have time for ICT based counseling”.*

*“How do you expect me to start chatting or discussing my problem with counselor on – line or through internet when I have my assignment to do”*

*“When there is no counseling laboratory in my school where do you expect me to get ICT – based counseling”.*

*“If my school can make ICT based counseling available this may curb or reduce yahoo plus in my school”.*

## Discussion

The emergence of information and communication technology has transformed our society to an information society. The results of this study revealed that 30% of the respondents have very high ability in the use of computer including use of different social networks for sending and receiving information. 30% have high ability, while 20% have moderate ability. 10% have low ability and only 5% have very low ability in the use of computer. This finding supported the fact that the youth are versatile in the use of computer and social networks in processing information. This latest finding corroborates that of Friedman (2005), who found that information Technology has become the pillar of all development and interaction and the whole world become a global village today, with high invention of technology tools, high speed networks and fast paced digital exchanges are more intricate part of our society than ever before.

The result of the study may be due to the fact that youth are good in exploration and they get better skill in computer usage.

Counseling as a helping relationship is expected to provide information to people in order to facilitate growth, development and positive change. ICT will help counselor to give responsible counseling that often requires information to be transferred quickly, it will

increase students' depth of understanding and exposure to materials in the school, career awareness, and classroom instruction.

The results of the study also revealed that 45.3% of the respondents do not have access to ICT based counseling due to lack of ICT facilities. This finding is very discouraging bearing in mind the importance of counseling as platform for providing a holistic development of students, coupled with the way internet has become an indispensable aspect of the contemporary knowledge – based society, in the area of communication and information dissemination.

## CONCLUSIONS AND RECOMMENDATIONS

The role and importance of information communication and technology in a globalised world has challenged tertiary institution in Nigeria, and in particular South – West Universities to fully embrace the provision of ICT – based counseling in order to curb social malaise among youth and to provide useful information to make them useful to themselves and society at large. It has been observed that there is a lack of ICT facilities in higher institutions of learning. It is recommended that full attention must be given to the availability of ICT facilities in tertiary institution. Regular internet services at school will boost online interaction between counselors and students. Therefore, recommendations were made that:

- Government should provide ICT facilities for students, counselors and lecturers of higher institutions of learning.
- As being agitated for by Association of Academic Staff (AASU), Government should provide good infrastructural material in higher institution of learning to facilitate teaching, learning and counseling.
- The university management should make provision for functioning counseling laboratories with ICT facilities that will facilitate ICT – based counseling.
- Counselors should improve their ICT skills to meet the ever increasing needs/demands of the students.
- National University Commission should be making periodic visit to monitoring the adequate provision of counseling to students of higher institutions of learning.

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6. Abstract

An Exploration of How Artistic Pedagogical Technologies Influence Interaction, Social Presence, and Community in the Online Post-Secondary Classroom

The purpose of this study was is to explore how artistic pedagogical technologies (APTs) influence interaction, social presence, and community in the online post-secondary classroom. This paper reports on phase 2 of a three year study. Online educational opportunities are growing at an exponential rate. Advances in Internet-based technology have changed the social and pedagogical perspective of online learning. The value of interaction, social presence, and community in the post-secondary online classroom is supported by many studies. To date there is less research exploring specific innovative teaching technologies that presume to help create interaction, social presence, and community in online education. Existing research on online teaching strategies focuses on philosophical stances and more traditional technologies such as collaborative software and computer-mediated conferencing. This project aimed to provide practical and theoretical outcomes that help to address this gap. Specifically, it offers educators,

researchers, and students additional theoretical understanding regarding how APTs influence the online undergraduate and graduate classroom. The study also provides practical teaching strategies that can be adapted and used by online educators. Phase I of the study involved the development, testing, and evaluation of three original, research-based, teaching technologies that can be adapted to a variety of disciplines. The APTs developed (and studied in Phase II) include conceptual quilting, photovoice, and parallel poetry. We define APTs as those founded in the arts, specifically literary, visual, musical, or drama mediums.

This was an exploratory qualitative research study using qualitative and quantitative research methods. The general research question was *how* do artistic pedagogical technologies stimulate interaction, create social presence, and facilitate the development of community in online, post-secondary, undergraduate and graduate classrooms? To address the extent to which APTs stimulate interaction, create social presence, and facilitate the development of a sense of community in the online post-secondary classroom, quantitative data were collected on these variables. To address the participants' experiences with these variables qualitative data were collected.

Participants included a convenience sample of 20 graduate students who had completed one of several online courses on teaching health care professionals in 2011. The courses were offered by one online university and taught by three different instructors although the course curriculum was the same for all offerings of the course. Students were recruited through an email sent to them individually by the research assistant (RA) after the final grades for their course were official. The RA continued to recruit participants via follow-up email invitations until a sample of 20 respondents consented to participate. In phase I on this study the data collection instrument and the focus group processes were trialed and refined. Phase 2 used these refined

tools/processes. Phase 2 involved data collected using an online survey (constructed using SurveyMonkey) and telephone focus groups. Those who consented to participate were contacted via e-mail by the RA and invited to complete the online survey which was based on the *Social Presence Scale* (Richardson & Swan, 2003) and the Sense of Classroom Community Index (Rovai, Lucking, & Cristol, 2001). The survey was available on secure website developed for this study. This survey examined students' perceptions of the effect of the APTs on interaction (including interaction between students and course materials, students and students, and students and the teacher), social presence, and the culture of community. Demographic data, Likert type items to assess the students' overall perceptions of course, and indicator statements related to interaction, social presence, and culture of community resulting from the artistic based teaching strategies were included on this survey.

At the conclusion of the online survey participants were asked to check a box if they would be willing to participate in a telephone focus group. A randomly selected group of those who were willing to participate in the focus group were contacted via email by the RA and invited to participate. The focus group data collection strategy provided data to illuminate the findings, and to add context in terms of the *how* the study technologies influenced the participants' experiences of interaction, social presence, and community. Participants were questioned regarding perceived links (if any) between these factors. Three focus groups (with 3 participants each) took place via teleconference. The moderator (the RA) of the online focus groups introduced the purpose of the group, laid the ground rules, initiated the discussion by posing general questions, and provided probes as necessary. The questions used to initiate and guide the focus group(s) were refined during phase 1 focus group experiences. The focus group conversations were recorded and transcribed.

In terms of data analysis, quantitative data from online survey were analyzed using correlations. Qualitative data from the open-ended questions on the online survey and data collected during the focus groups (transcripts) were saved to a word processing program and systematically analyzed using a process similar to narrative analysis. Specifically, the participant's narrative comments were read several times by each team member; fragments of sentences or groups of sentences expressing a key idea were highlighted; and these were grouped to identify core themes. The discovery of the themes was aided by using three points of reference; recurrence of ideas within the narrative data (ideas that have same meaning but different wording); repetition (the existence of the same ideas using the same wording); and forcefulness (verbal or nonverbal cues that reinforce a concept). NVivo10 was also used to manage data and assist with data analysis of the qualitative data.

The study found that interaction, social presence and the sense of community was enhanced in courses in which the specified APTs were used as teaching strategies. These outcomes were achieved through stimulating innovation and creativity, modeling risk-taking, personalizing interactions, developing a trust and conveying respect, and promoting learner control over learning. These findings were the major themes identified during data analysis. Findings suggest that for some course content and student populations adding APTs to the repertoire of pedagogical technologies may have positive benefits for graduate students as interaction is enhanced, the experience of social presence increased, and a culture of community is facilitated in the online post-secondary classroom.

Title: Working with paraprofessionals: Perspectives of physical educationalists about their experiences with paraprofessional support.

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**Abstract**

In Australia more and more students with disabilities are being included in physical education classes. Without adequate staffing and/or training this might be a daunting task for physical educators who teach in inclusive settings. The purpose of this study was to explore how Australian PE teachers utilize paraprofessionals when teaching SwD in inclusive environments. PE teachers ( $N=14$ ) completed an online questionnaire inquiring how paraprofessionals are being used and the strategies they are using to develop working relationships with paraprofessionals. Paraprofessionals appear to be doing well in supporting SwD in inclusive PE considering their lack of appropriate training and curriculum knowledge, and PE teachers believe they are utilizing them well. They provide a level of support that is generally to the satisfaction of PE teachers in charge of the class however the PE teachers' consistently provided areas in which the paraprofessional could improve. PE teachers too can do more to better utilize the fantastic resource that is paraprofessionals. It was found that this fundamentally comes down to communication with the paraprofessional about the SwD, assigning specific tasks for completion with the SwD throughout the lesson and professional development on how to better utilize paraprofessionals in PE.

## **Introduction**

In Australia an increasing number of students with disabilities (SwD) are being included in physical education (PE) classes (Department of Health and Ageing, 2006). This change in policy means that PE teachers have to increase their knowledge and pedagogical tools to create an environment appropriate for optimal learning for all students. Without adequate staffing and training this can be a daunting task for inclusive physical educators. Paraprofessionals, or teaching assistants who provide direct instructional services to SwD under the general supervision of a certified teacher, can be the means of success in a program for inclusion (Thompson & Edwards, 1994); and while classroom teachers have historically worked in tandem with paraprofessionals when teaching SwD, PE teachers typically have less experience in utilizing this valuable resource (O'Connor & McCuller, 1997).

Paraprofessionals are typically the least qualified, least respected, and the lowest paid of the teaching staff, yet they are expected to support and provide instruction to the most challenging of SwD (Giangreco & Broer, 2005). Pickett (1993) highlighted the importance of communication between the teacher and paraprofessional in the classroom, and the need for the attitudes and feelings of both teachers and paraprofessionals to be known, respected and understood. Thus, the aim of this descriptive inquiry into the perceptions of Australian PE teachers' use of paraprofessionals in an inclusive PE environment is not only timely, but to the knowledge of the authors, the only Australian investigation into this area.

With the new Australian teaching standards pushing towards inclusive education for all students (Australian Institute for Teaching and School Leadership, 2011), PE teachers will face new and different challenges (Smith, 2004). Hodge, Ammah, Casebolt, Lamaster, and O'Sullivan (2004) who queried PE teachers on the impact of inclusion on their pedagogy found that participants believed that not being able to give individualized attention and quality time to SwD, especially with a large class, adversely impacted their effectiveness.

Teachers also expressed concern at a lack of support (e.g., no paraprofessional assistance) when teaching inclusive PE. In particular, this lack of support made it more difficult to assist SwD when the rest of the class also required monitoring. Considering SwD learn better in PE with a 1:1 ratio or in small groups (Houston-Wilson & Lieberman, 1999), it is important to recognize that paraprofessionals can underpin successful PE inclusion if they are used effectively. These findings suggest that the support of a paraprofessional when teaching inclusive PE may increase teacher self-efficacy associated with teaching SwD and thereby improve the PE experience for SwD.

Despite all states in Australia now having educational policies that support inclusion, there is little Australian literature that describes the roles and responsibilities of paraprofessionals in the PE classroom. The use of paraprofessionals in PE settings has been well described for the North American educational system (Tews & Lupart, 2008; Causton-Theoharis & Malmgren, 2005; Horton, 2001; Stilwell, 1995; Thompson & Edwards, 1994; Vogler, French, & Bishop, 1989; Trame, 1982; Hardy, 1980). Yet, most of this understanding is derived from research that has explored the perceptions of the paraprofessionals, SwD, and their parents. The only study, that we could find, dedicated to examining the perspective of PE teachers on the use of paraprofessional in PE was a postgraduate thesis by Maurer (2004). In this research Maurer reported that the PE teachers he sampled from upstate New York were unaware of how to successfully utilize paraprofessionals within their curriculum. These PE teachers were described as professionals who thought paraprofessionals were not required in general PE because they demonstrated a lack of initiative, were incapable of assisting in this environment, and generally did not know what to do. They reported that their paraprofessionals often felt that they weren't required to assist; or felt they were employed to assist SwD in more academic areas, and that PE was their break time. Unfortunately for the SwD these negative opinions more than likely resulted in a negative impact on their inclusive

PE experience. Thus, considering the recent push in Australia to include all students in the general PE curriculum, an exploratory investigation into the mind of Australian PE teachers' about their use of paraprofessionals within the PE classroom is timely. This exploratory study had three aims: (1) to describe the Australian PE teachers' perceived level of need for paraprofessionals to assist them during inclusive PE, (2) to define how Australian PE teachers use their paraprofessionals in inclusive PE settings, and (3) to gather strategies employed by Australian PE teachers to develop positive working relationships with their paraprofessionals. The exploration of these three themes was underpinned by self-efficacy theory (Bandura, 1997) in an effort to descriptively explain the findings.

## **Method**

### *Participants*

Primary and secondary PE teachers from Tasmania ( $N=450$ ) were sent an invitation email through the Tasmanian Australian Council for Health, Physical Education and Recreation listserv to participate in this study. Tasmanian PE teachers were chosen due to their demographic location in relation to where the research team was based. Additionally, Tasmania has a mixture of both urban and rural schools, and while it is on a smaller scale, it was viewed as an appropriate representation of other Australian states' education systems, particularly as the state moves towards incorporating the national curriculum (Department of Education, 2011). The only inclusion criteria stated in this email was that the PE teacher must have taught SwD in inclusive PE with the assistance of paraprofessionals within the last year. A low response rate was recorded (6%) but further information indicated that there were low numbers of PE teachers who had access to paraprofessional help. Twenty-nine respondents volunteered to participate by electronically signing a university ethics committee approved consent form. Of the 29 respondents 16 participants started the survey with only 14 ( $n = 8$  female,  $n = 6$  male) completing the survey, which took an average of 15 minutes to complete.

All data were stored electronically on the chief investigator's computer, with identification information removed to maintain participant anonymity.

The research sample ( $N = 14$ ), taught in a mixture of urban and rural primary and secondary schools. Overall, participants had a mixture of teaching experience with six participants having less than 15 years of teaching experience teaching PE, and the remainder ( $n=8$ ) having more than 15 years experience. The six less-experienced participants had received adapted PE training in the form of one adapted PE unit as undergraduates at university. The more-experienced participants had no formal training in adapted PE during university. Only one participant indicated that their paraprofessionals had received training to assist in PE, while the remaining 13 were either 'unsure' or stated 'no'. The one participant indicated that the school funded an after-hours workshop for the paraprofessionals, but the change in performance and outcome when supporting the PE teacher in PE was only 'somewhat helpful'. The sample was also asked to report on what types of student disabilities they had taught in the past year. All teachers reported having taught students with ADHD ( $n = 14$ ) and students with autism ( $n = 14$ ); whereas only a proportion of the teachers had taught students with speech/language impairment ( $n = 12$ ), specific learning disability ( $n = 9$ ), other health impairments ( $n = 6$ ), hearing impairments ( $n = 6$ ), visually impaired ( $n = 6$ ), cerebral palsy ( $n = 4$ ), multiple disabilities ( $n = 4$ ), spina bifida ( $n = 4$ ), Down's syndrome ( $n = 3$ ), mental retardation ( $n = 2$ ), traumatic brain injury ( $n = 2$ ), and deafness ( $n = 1$ ).

### *Instrument*

*The Paraprofessionals in PE Settings survey (PPE)*: The survey used in the current investigation was based on an adaptation of Maurer's (2004) survey. The PPE contained 29 items divided into four categories; teachers' sense of self-efficacy of paraprofessionals, the need for paraprofessionals in PE, utilization of paraprofessionals, and strategies to develop positive working relationships with paraprofessionals. The survey was a mixture of Likert

scale, frequency, rank, and open ended questions. Modifications to items centered on redrafting of text to reflect an Australian context.

*Section 1. Teachers' sense of efficacy of paraprofessionals skills scale (TSPS):* The TSPS measured PE teachers' self-efficacy levels associated with their paraprofessionals' ability to assist in inclusive PE. This scale contained 13 items adapted from Hoy's (2000) classroom teachers' self-efficacy inventory. Single items assessed participants' sense of efficacy for each role associated with teaching by paraprofessionals. Each item was prefaced with the stem, "What level of confidence are you that your paraprofessional can..." The ending of these 13 statements can viewed in table 1. Efficacy was measured using Likert-scale choices including 5-A great deal, 4-Quite a bit, 3-Some, 2-Very little, and 1- No.

*Section 2. Need for paraprofessionals in inclusive PE:* The PE teachers' perceived need for paraprofessionals to assist during inclusive PE was explored through three items. First, participants responded to the stem "How competent do you feel teaching SwD in PE" on a 4 point Likert-scale (1-Very competent, 2-Competent, 3-Unsure, or 4-Not competent). Participants then responded to the stem "How satisfied are you with the level of support you receive from paraprofessionals in inclusive PE" (1-Very satisfied, 2-Satisfied, 3-Somewhat satisfied, 4-Not very satisfied, or 5-Unsatisfied). Finally, participants were asked to elaborate on these responses in an open-ended section.

*Section 3. Utilization of paraprofessionals in PE:* In this section, participants were asked to report how often their paraprofessionals performed nine typically assigned PE-related tasks during inclusive PE. Each item began with the stem, "The paraprofessionals I have worked with are capable of..." to which nine tasks were listed, including: (1) carrying out lessons or tasks set by the PE teacher, (2) providing one-on- one PE instruction for a SwD, (3) modifying curriculum choices and adapting equipment under the guidance of the PE teacher, (4) setting up materials and equipment for PE activities, (5) physically assisting

SwD to move through an activity, (6) assisting in behavior management for SwD, (7) administering assessments adapted specifically for SwD, (8) planning learning activities for SwD, and (9) recruiting students without disabilities to peer model for SwD. Participants responded to each using a 5 point Likert scale (1-Always, 2-Often, 3-Rarely, 4-Never, or 5-not applicable). Participants were then asked to rank each of these nine items for importance as to what paraprofessionals should be capable of completing in their inclusive PE setting. A ranking of one represented the most important task while a ranking of nine indicated the acknowledgment that the task was least important. Finally, PE teachers were allowed to indicate anything else they would like paraprofessionals to do in PE to support SwD and/or the PE teacher. This section allowed for the identification of how PE teachers viewed paraprofessional tasks, and thus how they most wanted the paraprofessionals to assist during inclusive PE.

*Section 4. Strategies to develop positive working relationships with paraprofessionals:* Participants were first asked who they thought was responsible for training paraprofessionals about their responsibilities' as an assistant in the inclusive PE setting, either the PE teacher, paraprofessional, special education teacher, or the paraprofessional should not be trained in a PE context. This was followed by an open-ended question to allow the participants to elaborate on the choice of strategies they would use to improve inclusive PE delivery. Finally, participants were asked if the paraprofessionals had taught them anything about teaching SwD through reciprocal communication.

#### *Data analysis*

A Cronbach's alpha coefficient to assess reliability of the survey's items yielded high reliability ( $\alpha = 0.82$ ) for the survey used in the current investigation. Considering the exploratory nature of this research study, several forms of descriptive statistics were used to capture the meaningfulness of the numerical data. These included means and standard

deviations for the Likert-scale responses, number ( $n$ ) of participants who selected a particular response, frequency ( $f$ ) counts of tallied responses, and ordinal group data reported as the top three and bottom three responses. The latter technique enabled most common and least common responses to be explored and highlighted areas for discussion. Quantitative data were also reported as a function of teaching experience where applicable. All quantitative data were calculated using SPSS Version 21 software.

In terms of analytic method, we used a typological analytical approach (Lincoln & Guba, 1985) because we drew upon literature to guide the development of questions and categories and the way in sorting of the data. Notwithstanding as researchers in the area, we were aware of other quantitative and qualitative outcomes associated with the research area, so there was a degree of inductive-generating subjective processing in the formation of emergent themes. Data were analysed using the NUD\*IST software program (Richards, Richards, McGalliard, & Sharrock, 1992). Using this program to store, manage and analyze data enabled the researchers to realise the exploratory and explanatory purposes of the study. Important concepts that emerged from the data were labeled, categorized, and coded (Patton, 2002). The transcripts were independently read and re-read by the three researchers and ideas about evidence to support each of the main categories noted. Once the researchers had completed initial coding the research team met where codes were compared and disagreements were discussed. Peer examination guards against bias and enhances the robustness of the findings (Burnard, 1991).

## **Results and Discussion**

### *Section 1: Efficacy*

Overall using the TSPS portion of the PPE, physical educators reported low efficacy levels ( $M = 2.98$ ,  $SD = 0.63$ ) for paraprofessionals to complete the 13 tasks associated with teaching inclusive PE. A review of individual items associated with various tasks indicated

that for some tasks and roles the participants reported having moderate levels of efficacy related to paraprofessionals' skills (Table 1). Participants reported highest confidence in paraprofessionals' skills in being able to make PE a safe place ( $M = 3.88, SD = 0.34$ ), making PE enjoyable ( $M = 3.68, SD = 0.48$ ), and being able to control disruptive behavior ( $M = 3.56, SD = 0.63$ ). Nonetheless, the lowest levels of confidence for paraprofessional assistance was reported for connecting with students ( $M = 2.11, SD = 0.62$ ), promoting learning ( $M = 2.35, SD = 0.72$ ), and motivating students ( $M = 2.68, SD = 0.70$ ). This order of importance was the same for the more-experienced PE teachers; however the less-experienced PE teachers had a slightly different order at the top and bottom of the scale. These teachers placed keeping students on task ( $M = 3.33, SD = 0.82$ ) as a more important task than controlling student behavior. On the other end they thought expressing their views task ( $M = 2.50, SD = 0.55$ ) was not as important as motivating students. Perhaps the adapted PE training they received at university prepared them more to control classroom behavior and they did not think this was the responsibility of the paraprofessionals. Moreover, their training may not have prepared them to consider the paraprofessionals as a viable source of input to improve service delivery. Considering the lack of data to make comparative analyses with, these speculative results suggest that these findings can serve as starting points to be addressed by pre-service teacher training programs in Australia. Increasing PE teacher self-efficacy in this capacity could result in successful utilization of paraprofessionals as teacher tools. This might allow PE teachers to spend more time on whole class instructional strategies, while appropriately utilized paraprofessionals could support SwD during the lesson as intended.

### *Section 2: Need*

In terms of participants' feelings of competency only 37.5 per cent of the more-experienced teachers reported feeling 'competent' about teaching PE to SwD, compared to 70

per cent of the less-experienced participants (no one in our sample scored ‘very competent’). Notwithstanding, it stands to reason that university training in this area of specialty should increase competence, as well as attitudes towards teaching PE to SwD (Folsom-Meek, Nearing, & Kalakian, 2000). This trend of having low to moderate levels of competency associated with teaching SwD in PE was also reflected in the open-ended data. Several of the more-experienced participants expressed the need for paraprofessionals existing because of a lack of their own adapted PE training. Common was the expression of trying to provide a quality learning experience to SwD and the necessity of the paraprofessional. One more-experienced physical educator wrote, “I have had no training in adapted PE, so I rely a lot on the paraprofessional. I regularly ask the paraprofessionals about behavior management techniques that worked well with specific SwD.” Thus for our sample, even though they were paid professionals, there was a collective sense of low competency for being able to deliver a satisfactory inclusive learning experience, without the aid of paraprofessionals. This is not surprising given the recent changes to school enrolments and the lack of professional development offered to teachers in Australia.

In terms of participants’ sense of satisfaction with the paraprofessional support when teaching SwD in PE, the majority of PE teachers either reported being ‘satisfied’ ( $n = 7$ ) or ‘very satisfied’ ( $n = 5$ ). This is understandable given the previous findings related to competency. Although, if PE teachers express low competency levels associated with teaching SwD in PE, the question could be raised as to their competency to judge the work of paraprofessionals. Participants frequently described the sense of commitment evident in paraprofessionals work with SwD in PE settings. This commitment was directed at ensuring that SwD had an enriching learning experience. Moreover, it seemed that without the paraprofessionals, participants perceived that SwD learning experiences would be of lesser quality. One experienced physical educationalist noted:

As I can only give a limited amount of personalized time to each student in the class, in any one lesson, SwD would not be able to get the most out of the lesson. These students require extra and repeated instructions to be able to complete tasks. The SwD would feel more comfortable and secure with their aid and more likely to become more involved. These are all skills that the paraprofessionals that I have worked with have demonstrated. They have always been supportive of my program and helpful in carrying it out.

Another less-experienced physical educationalist from an urban school wrote, “By having support available during the lesson the SwD are gaining the best possible outcome from an activity that is not necessarily planned or suitable for their level of ability.” Thus for participants who feel a lack of competency associated with SwD in a PE context, the paraprofessionals provide much needed support to ensure a quality learning experience. Nonetheless, participants indicated a level of ambivalence towards the inclusion of SwD into the PE curriculum. The challenges faced by PE teachers when teaching inclusive PE to SwD is well documented (e.g., Obrusnikova & Dillon, 2011). The theme of ambivalence present in our study was related to the impact of SwD on the learning experiences of general PE students. In some respect, the attitude reflected a behavior of integration of SwD, but not inclusion. In this sense, it appears that for some PE teachers, the SwD had to fit into the existing curriculum without modification. Participants indicating that they had not adopted curricula content that would allow SwD participate regardless of the presence of paraprofessionals. Thus, if paraprofessionals were not present, participants indicated that they would exclude the SwD in favour of ensuring a quality learning experience

for the general students. A less-experienced physical educator wrote:

Without the paraprofessional in attendance general students would be adversely affected in a group situation. No matter how patient and kind they are. Without a paraprofessional present, someone must miss out on teacher time, the child with the disability or the class.

Similar sentiments were expressed by an urban-based, more-experienced physical educator who noted:

The presence of the paraprofessional provides a constant for the student. Due to noise, tantrums, frustrations, defiance or whatever, behaviors are exhibited by the student at the time, the aide needs to remove him/her to benefit the learning opportunities of the class and to optimize safety for all.

Negative attitudes and behaviors towards SwD occur for many reasons, but SwD might internalize these negative attitudes if they experience being excluded because the paraprofessional is not present during their PE class. Such internalization can negatively affect SwD behavior, social relationships, education and health. Understanding the presence of negative attitudes held by PE teachers might be evident in the previous result of a lack of competency for teaching SwD. That is, PE teachers might feel overwhelmed by having to include SwD into their classroom and do not have a full understanding of the appropriate pedagogical techniques to ensure quality of learning. This rational has support with some participants indicating that paraprofessionals needed to upgrade their knowledge about creating and developing learning opportunities for SwD within the realm of the PE setting. A

more-experienced physical educator wrote, “The paraprofessionals that we have are excellent in every way but there is always room for more support and guidance/funding to making learning opportunities even more valuable for SwD and learning difficulties.” Thus, rather than the PE teacher seeking out professional learning so as to develop a better learning environment for SwD in PE, the participant PE teachers placed the onus onto the paraprofessional.

### *Section 3: Use*

Participants were asked to indicate how often their paraprofessionals completed nine separate tasks that paraprofessionals might typically perform in an inclusive PE setting. Furthermore, they were asked to rank these tasks based on their importance within the curriculum. For the most part participants were agreeable (‘often’ was the most frequent response) with the regularity in which their paraprofessionals completed these PE-related tasks. Nonetheless, tasks such as setting up materials and equipment ( $f= 8$ ), administering tests ( $f= 12$ ), and planning learning activities ( $f= 13$ ) were the three tasks that received negative responses of ‘rarely’ and ‘never’. Perhaps if paraprofessionals received training in PE during their professional development they could contribute to these areas and foster a more inclusive PE environment for SwD (Hardy, 1980).

In terms of ranking the importance of these tasks the ability to use guidelines set by the PE teacher was the highest ranked role ( $n = 7$ ), followed by physically assisting SwD ( $n = 4$ ), and providing 1:1 instruction ( $n = 4$ ). These rank orderings were further described as a function of years of teaching experience. The more-experienced PE teachers expressed that having paraprofessionals follow guidelines they set was the most important, while the less-experienced teachers noted that providing 1:1 instruction to the SwD was of most value. The bottom three ranked tasks reported by the sample were planning learning activities ( $n = 12$ ), administering tests ( $n = 10$ ), and setting up materials and equipment ( $n = 9$ ). These lower

three rankings were reported the same regardless of teaching experience. Taken collectively these data indicate that the PE teachers recognize that the paraprofessionals, who are not trained in PE, do not have much to contribute in ways of PE-specific responsibilities. They are more likely to use these individuals as an 'extra set of hands' to perform tasks that are more closely related to those of a care-taker, rather than those of an educator.

In their open-ended responses, participants identified other roles that paraprofessionals fulfill in PE settings. PE teachers frequently commented that paraprofessionals helped SwD integrate with the general students. A more-experienced physical educationalist wrote:

The paraprofessionals assist SwD to combine well with general class students especially in group activities. Paraprofessionals lead SwD through daily PE activities or provide the child with an alternative activity. For example, paraprofessionals will continue with daily bike riding skills, first taught by the PE teacher.... then passed onto the paraprofessionals to continue once skills were established.

In this case, the communication of responsibility between PE teacher and paraprofessional was an effective strategy for aiding in the skill development of the SwD. This demonstrates the proper use of paraprofessionals as an educational assistant to successfully implement inclusive PE.

#### *Section 4: Strategies*

Participants presented a variety of different strategies used to develop working relationships with paraprofessionals. These strategies centered on increasing paraprofessionals' knowledge about teaching PE and providing support in PE classrooms. Some expressed a desire for individualized or school-based training for paraprofessionals. For example, one more-experienced participant wrote:

There should probably be some general training but everyone works slightly differently and students' needs vary so the teacher and the paraprofessional need to work together to decide how best to operate for the success of the students. I believe it comes down to our 'Advanced Skills Teacher' or 'Assistant Principal' in arranging professional learning time to train in this area.

Alternatively, others felt that the PE teacher should be responsible for this training. This is an interesting theme as the majority of participants felt they were not competent to teach SwD. One more-experienced participant noted:

I personally feel I train the paraprofessionals to do what I think is the right thing to do, however I think I just use a common sense approach, which may not necessarily be right. With appropriate PE teacher training it is probably their job to help the aide to teach in the way they want, however a professional body to do the job would be best.

Regardless of the variety of responses, the lack of an identified training process for paraprofessionals and PE teachers for teaching SwD is evident. This lack of a training process suggests that teacher registration boards need to give more direction to teacher training programs and schools about inclusive PE.

When asked if their paraprofessionals had taught the physical educators anything about teaching SwD, 11 out of 14 participants indicated 'yes'. In terms of what was taught, participants wrote about learning appropriate behavior management strategies for SwD, ways of connecting and communicating with SwD, as well as individual characteristics of certain disabilities. One participant noted:

One of our paraprofessionals has worked with the same boy since kindergarten (now in grade 11) so she knows his cues and medical needs better than just about anyone and has excellent advice for ways to try things and go about activities such as the verbal and non- verbal cues that can be used, particularly those on the autism spectrum.

This last piece evidence indicates that a successful working relationship will not only benefit the paraprofessional and the PE teacher, but most importantly the SwD. For example, in terms behavior management the most successful strategy is a consistent one that can be applied throughout the course of the school day. Since the paraprofessionals are typically with the SwD throughout the day, they can effectively communicate the behavior management plan to the PE teacher. This would allow for a working relationship to blossom; and ultimately compel the PE teacher to respect the paraprofessional as an integral part of the service delivery model for SwD.

## **Conclusion**

In this exploratory study it was our aim to provide a snapshot of how Australian PE teachers describe their working relationships with paraprofessionals when teaching. It should be noted that the interpretation of these data should be done with caution as our sample size was limited. This was reflected by our low response rate which may have been attributed to negligence of this area of inquiry on the part of the population, or perhaps do to a lack of support in terms of having paraprofessionals in some school districts. Regardless of their level of teaching experience or university training, none of the physical educators in our sample felt very competent in teaching PE to SwD. Thus, there was a strong theme of needing paraprofessionals for PE settings when SwD were present. This theme is not

reflected of Maurer (2004), who noted that American PE teachers believed paraprofessionals were not required in general PE because they demonstrated a lack of initiative, they were incapable of assisting, and they did not know what to do. Our sample, while supportive of the use of paraprofessionals in PE, showed an ambivalent attitude towards inclusion, with an attitude that paraprofessionals needed more professional development to improve the quality of the learning experience for SwD.

Evident in our study, is a lack of confidence in PE teachers to deliver quality learning experiences to SwD in a PE setting. Moreover, it seems that there is a heavy reliance on paraprofessionals to do the heavy lifting in terms of teaching SwD in PE. A major concern for paraprofessionals about their role in PE has been their lack of training and knowledge of the PE curriculum (Horton, 2001). Thus, planning learning activities and administering tests appropriate to curriculum standards and SwDs' ability have been identified as posing problems for paraprofessionals, and the current participants have highlighted this.

Paraprofessionals appear to be doing well supporting SwD in Australian inclusive PE settings considering their lack of appropriate training and curriculum knowledge, and PE teachers believe they are utilizing them well. Paraprofessionals provide a level of support that is generally to the satisfaction of PE teachers in charge of the class. Nonetheless, PE teachers' consistently provided many areas for improvement in paraprofessionals' skills and knowledge. Physical educators too can do more to better utilize the needed resources of paraprofessionals when teaching SwD in PE classrooms. This fundamentally comes down to communication with the paraprofessional about the SwD, assigning specific tasks for the paraprofessional to complete with the SwD throughout the lesson or unit and specific training on how to better utilize the paraprofessionals in PE.

Additionally, PE teachers need to work on strategies to improve their professional relationships with paraprofessionals to better the PE experience for SwD. Future implications

of this research could be the development of appropriate training courses for paraprofessionals highlighting the specific target areas of assessment in PE and developing appropriate learning activities for the SwD in PE. Training may include ways to more successfully communicate with PE teachers regarding SwD needs, the problems and pitfalls associated with learned helplessness and dependence on the paraprofessional (Goodwin, 2001), how to facilitate SwD interaction with their peers to help them foster social situations (Causton-Theoharis & Malmgren, 2005), to help SwD avoid social isolation by facilitating peer interaction time (Tews & Lupart, 2008), and to enhance their level of understanding of PE content and requisite physical abilities that SwD might encounter throughout a specific lesson. PE teachers and paraprofessionals alike need to take on more responsibility when it comes to providing SwD a PE, something that could greatly improve the quality of life of SwD. Because as SwD get older, self-reliance and increased levels of self-dependence should be a tenable goal that can be fostered through PE development (Natterlund, Gunnarsson, & Ahlstrom, 2000).

The vast majority of literature pertaining to paraprofessionals in PE is presented from an American viewpoint, where education of SwD is somewhat different to education of SwD in Australia. United States legislation employs a 'least restrictive environment' policy, in which SwD are placed in inclusive PE on a continuum, depending on the severity of their disability (Block & Krebs, 2011). Australia's PE for SwD is somewhat dichotomous; it is either segregated, or inclusive and the severity of the child's disability and degree of social maladjustment have both been identified as important factors in determining the segregated or inclusive placement of individuals (Thomas & Loxley, 2001). Hence, with limited Australian literature on paraprofessionals to use as a foundation for the study and no definitive national curriculum model or policy that facilitates inclusion the need for

expansion in this area of research inquiry is imperative to facilitate successful inclusion practices in PE in our nation.

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Table 1 *Teachers' sense of efficacy associated with paraprofessionals assisting in teaching PE to SwD (TSPS)*. Each item was prefaced with the stem, "What level of confidence are you that your paraprofessional can..." Statements are listed hierarchically based on the overall sample's five point Likert scale values presented as means (standard deviations).

<b>Statement ending</b>	<b>Overall</b>	<b>Teaching Experience</b>	
	<b>(N=14)</b>	<b>&lt;15 years (n = 6)</b>	<b>&gt;15 years (n = 8)</b>
Make PE safe	3.88 (0.34)	3.67 (0.52)	4.00 (0.00)
Make students enjoy PE	3.68 (0.48)	3.50 (0.55)	3.80 (0.42)
Control behaviour	3.56 (0.63)	3.16 (0.75)	3.80 (0.42)
Help students trust teachers	3.50 (0.73)	3.16 (0.75)	3.70 (0.68)
Help children follow rules	3.43 (0.51)	3.16 (0.41)	3.60 (0.52)
Keep students on task	3.37 (0.72)	3.33 (0.82)	3.40 (0.70)
Help students to work together	3.28 (0.60)	3.33 (0.52)	3.26 (0.68)
Prevent behaviour issues	3.00 (0.89)	2.83 (0.98)	3.10 (0.88)
Help children complete tasks	2.87 (0.72)	2.67 (0.82)	3.00 (0.68)
Express views	2.71 (0.60)	2.50 (0.55)	2.80 (0.63)
Motivate students	2.68 (0.70)	2.83 (0.75)	2.60 (0.70)
Promote learning	2.35 (0.72)	2.50 (0.55)	2.30 (0.82)
Connect with students	2.11 (0.62)	2.50 (0.55)	1.90 (0.57)

Title: Inclusive physical education: Pre-service teachers' views of including pupils with autism and ADHD in physical education.

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**Abstract**

Researchers used a purposive sample of pre-service physical education teachers ( $N=56$ ) from two different Universities to explore differences in perceptions of teaching to children with ADHD and autism in physical education. A modified version of The Physical Educators' Attitudes Toward Teaching Individuals with Disabilities-III (Rizzo, 1993) instrument was used for data collection. Attitude differences were examined as a function of participants' gender, course work preparation, and experience teaching individuals with disabilities. Findings indicate that course work preparation was the only factor to moderate attitudes towards teaching students with autism and ADHD. Pre-service teachers' who received more training in adapted physical education had more favorable attitudes towards teaching students with autism and ADHD compared with the cohort who received less training. Discussion of the implications of this research for pre-service teacher training and development are explored

**Introduction**

Current Australian legislation indicates that students with disabilities (SwD) are to receive equal levels of physical education (PE) as their peers (Australian Human Rights Commission, 2008; Board of Studies New South Wales, 2008a; Board of Studies New South Wales, 2008b). Over the last five years, Australia has moved towards a more inclusive curriculum for SwD. This move has resulted in SwD attending inclusive schools and participating in the general curriculum. Despite paraprofessionals for SwD transferring to these schools, existing PE staff have received little or no training on how to appropriately include these students into the PE curriculum. There is paucity of literature within Australia dedicated to the intentions that pre-service PE teachers have towards including SwD in PE programs (Martin & Kudlacek, 2010). This disparity in research drives the necessity for further investigation into the adequate preparation of pre-service PE teachers to include SwD within the Australian teaching system.

**Background**

This dearth of literature is incomprehensible given the amount of adapted PE literature generated from and sourced in the United States of America regarding this topic (Casebolt & Rizzo, 2004; Folsom-Meek, Nearing, & Groteluschen, 1996; Folsom-Meek, Nearing, Groteluschen, & Krampf, 1999; Folsom-Meek & Rizzo, 2002; Hodge & Jansma,

1999; Hodge & Jansma, 2000; Hodge, Davis, Woodard, & Sherrill, 2002; Kowalski & Rizzo, 1996; Martin & Kudlacek, 2010; Rizzo, 1984; Rizzo & Kirkendall, 1995; Rizzo & Vispoel, 1991; Rizzo & Vispoel, 1992; Rowe & Stutts, 1987; Stewart, 1990). This research has investigated several independent variables to help understand the factors that influence PE teachers' (practicing and pre-service) intentions towards including SwD in a general PE class. Examples of variables include gender (Rowe & Stutts, 1987), perceived competence (Hodge et al., 2002), practicum type (Rowe & Stutts, 1987; Hodge & Jansma, 1999; Hodge et al., 2002), amount of practicum experience (Hodge & Jansma, 1999), severity of disability (Folsom-Meek & Rizzo, 2002, Rizzo & Vispoel, 1991, Rizzo & Vispoel, 1992), teaching experience (Rowe & Stutts, 1987) and types of academic preparation (West, 2009). Two of these variables have produced robust findings: the amount of pre-service teacher training and the severity of student disability. Thus, utilizing the theory of planned behavior (TPB: Ajzen, 1991) these two independent variables were the focus of this inquiry into Australian pre-service PE teachers. The hypothesis for this investigation was that a more comprehensive exposure (academic work plus practicum experience) to SwD training for pre-service PE teachers' will result in significantly more favorable intentions towards teaching SwD. It was also of interest to the authors to learn if the pre-service PE teachers' intentions were affected by the severity of student disability.

## **Method**

### **Participants**

The sampling design was purposive. The criteria established for an Australian university to be included in the study were: a) offer a PE degree b) offer an introductory adapted PE course with a corresponding practicum component c) a unit coordinator willing to ask students involved in the introductory adapted PE course to participate, and d) a unit coordinator willing to aid in the distribution of surveys. Two Australian universities were

found suitable for this study. Participants were 56 pre-service PE teachers enrolled in an introductory adapted PE unit from either the University of Tasmania (UTAS) or Latrobe University at Bendigo (LUB). The LUB participants ( $n=25$ : female=14, male=11) were in their third and fourth year of teacher education, and UTAS participants ( $n=31$ : female=13, male=18) were in their third year of their teacher education. Each participant provided informed consent in accordance with the University Human Ethics Committee procedures.

### **Academic preparation for teaching SwD**

The two cohorts of participants were both undertaking an introductory adapted PE unit at university. However each cohort received different education in terms of their academic preparation. During their adapted physical activity unit the UTAS cohort received lecture content (13 hours) on disability sports, pedagogical styles and strategies through participating in developmentally appropriate games, assessment in the motor and fitness domain, behavior management, and adapted aquatics. Moreover, these students were exposed to specific disability content concerning autism spectrum disorders, intellectual disabilities, sensory conditions, and neuromuscular conditions. The UTAS cohort also underwent a five hour practicum experience at a segregated school for SwD, This included observational learning and teacher-assisted learning. Assessment for the unit included responding to a case study vignette about a hypothetical SwD, producing an annotated bibliography of a specific disability, and a comprehensive final exam.

The LUB cohort also had completed a unit in adapted physical activity. During this class they experienced 13 hours of lecture content consisting of labelling theory, development of an individual program, program support group strategies, medical and safety considerations, understanding the child with a disability, individual program goals, and modifying participation. The following disabilities were incorporated into the coursework: physical disability, visual impairment, severe behavior disorder, hearing impairment,

intellectual disability, and autism spectrum disorder. The LUB pre-service teachers participated in a 40 hour practicum located at both segregated and inclusive PE classes around the community. Pre-service teacher responsibilities included observational learning, assisted teacher learning, one-on-one instruction for a SwD in the class, and lesson development for this student. Assessments involved in this unit were a presentation and a reflection of their practicum experiences. The presentation involved the participants presenting an adapted PE lesson for their SwD. The lesson included a warm up, skill development, and a group game. The second assessment, the practicum experience reflection, involved the LUB cohort to plan, implement, and evaluate a PE unit including SwD within their school practicum setting. The characteristics, cause, etiology, prognosis, implications for PE, recommended activities, effective teaching strategies, and positive behavior management strategies were all included in this assignment.

### **Instrument**

To test the hypothesis in this study a modified version of the Physical Educators' Intention Toward Teaching Individuals with Disabilities (PEITID) survey was used (Tripp & Rizzo, 2006). The TPB (Ajzen, 1991), an extension of the theory of reasoned action (Ajzen & Fishbein, 1980), was the foundation of this survey. That is, intentions of the participants were measured by a six factor construct: behavioral beliefs (BB), attitude toward the behavior (ATB), normative beliefs (NB), subjective norm (SN), control beliefs (CB), and perceived behavioral control (PBC). The survey contained 35 belief statements which individually loaded on one of these factors. Participants responded to each belief statement by demonstrating their level of agreement using a 7-point Likert scale (1 = strongly disagree to 7 = strongly agree). The original survey measured participants' intentions towards teaching PE to a student with attention deficit hyperactivity disorder (ADHD). To determine if severity of student disability played a role in the intentions of pre-service PE teachers a vignette

portraying a student with autism was added to the survey. The autism vignette was kept to the same structure and outline as the ADHD vignette. Therefore, participants were asked to respond to the same 35 Likert-scale belief statements for both disability vignettes, the less severe disability (ADHD) and the more severe disability (autism). These data were subject to data analysis according to the six factors, instead of the 35 belief statements.

### **Procedures**

During a pre-determined class time the participants were handed an information sheet and told about the nature of the study. Once informed consent was obtained from each participant, the unit coordinator distributed the survey. For those students who were absent the day of data collection, a copy of the information sheet, consent form, and survey was sent to each student with a stamped return envelope. The overall response rate for this data collection was 82 per cent. All participants were notified that participation was completely voluntary and all responses would remain strictly confidential. The survey took approximately 30 minutes to complete.

### **Data Analysis**

#### ***Reliability***

Reliability correlation coefficients were calculated for the original Likert scale responses and the six factor structure (ADHD vignette) to measure consistency and accuracy of the PEITID. Furthermore, this was calculated for the modified version of the survey (autism vignette) to test the reliability of this revised portion. Cronbach's alpha coefficient was used as an index of overall reliability, as it is the recommended measure of consistency for attitude scales (Thomas & Nelson, 2001). Alpha for the responses to the 35 ADHD vignette belief statements was 0.84, and was 0.71 for the summative six factors. The 35 autism vignette belief statements revealed an alpha coefficient of 0.83, and 0.75 for the

summative six factors. These coefficients are similar to past reports of reliability using the PEITID to measure intentions for teaching SwD in PE (e.g., Oh et al., 2010).

### ***Inferential Statistics***

Independent samples t-tests were run using group (UTAS, LUB) as the independent variable for each of the six TPB factors (BB, ATB, NB, SN, CB, and PBC) separately for the ADHD and autism portions of the survey. This allowed us to statistically analyze our hypothesis concerning the academic preparation and its effect on the intentions of our sample. The effect of the severity of disability on intentions was inferred by comparing the number of statistical findings between the two versions of the survey (ADHD and autism). Alpha was set at 0.05 with a Bonferroni adjustment for multiple t-tests (Keppel, 1991). All statistical procedures were carried out utilizing SPSS software (version 21). Given the use of a 7-point scale to measure attitudes, intentions, and beliefs, and the guidelines for assessing the meaningfulness of effect sizes between groups in educational settings (Coe, 2002), we set an *a priori* effect size of 0.80 or above as a limit for meaningfulness (47% non-overlap). This effect size was based on the costs associated with adding training into curriculums for pre-service teachers.

### **Results**

For the original version of the survey (ADHD vignette) effect sizes between cohorts across all factors ranged from 0.29 to 0.90. Only one of the factors, ATB, significantly distinguished between the two groups (Table 1). The LUB cohort reported a significantly more positive attitude,  $t(54) = 3.27, p < 0.05$ , toward teaching a student with ADHD than the UTAS cohort. In terms of effect size for this factor, the LUB's mean score for ATB of teaching a student with ADHD is approximately equal to the 70<sup>th</sup> percentile for the UTAS cohort. Apart from the BB factor, all other effect sizes between the cohorts were deemed to lack meaningfulness.

Table 1. Theory of Planned Behavior Factors for the ADHD Vignette\*.

	UTAS ( $n=31$ )	LUB ( $n=25$ )	Effect (Cohen's $d$ )
Behavioral beliefs	4.61 (0.96)	5.03 (0.67)	0.84
Attitude toward behavior	5.63 (1.12)	6.45** (0.62)	0.90
Normative beliefs	5.61 (1.05)	6.01 (0.82)	0.42
Subjective norm	4.77 (0.59)	4.95 (0.62)	0.29
Control beliefs	3.88 (0.93)	4.19 (0.78)	0.36
Perceived behavioral control	5.53 (1.10)	6.04 (0.82)	0.52

\* Values are represented as means (SD).

\*\*Indicates the LUB was significantly higher than the UTAS cohort ( $p < 0.05$ ).

For the autism version of the survey, effect sizes between cohorts across all factors ranged from 0.17 to 0.84 (Table 2). Although two factors (BB and ATB) were significantly different between the cohorts, the ATB factor,  $t(54) = 2.45$ ,  $p=0.02$ ,  $d=0.67$ , did not reach our *a priori* effect size ( $d=0.80$ ) cut off. The LUB cohort had significantly more positive BB,  $t(54) = 3.15$ ,  $p < 0.05$ , about being able to teaching a student with autism than the UTAS cohort. Apart from the BB factor, all other effect sizes between the cohorts were deemed to lack meaningfulness.

Table 2. Theory of Planned Behavior Factors for the Autism Vignette\*

	UTAS ( <i>n</i> =31)	LUB ( <i>n</i> =25)	Effect size (Cohen's <i>d</i> )
Behavioral beliefs	3.98 (0.78)	4.64** (0.78)	0.84
Attitude toward behavior	5.33 (1.28)	6.07* (0.86)	0.67
Normative beliefs	5.47 (1.07)	5.72 (0.93)	0.24
Subjective norm	4.79 (0.63)	4.90 (0.63)	0.17
Control beliefs	3.41 (0.78)	3.74 (0.79)	0.42
Perceived behavioral control	4.89 (1.08)	5.47 (1.03)	0.54

\* Values are represented as means (SD).

\*\* Indicates the LUB was significantly higher than the UTAS cohort ( $p < 0.05$ ).

## Discussion

The purpose of this study was to investigate if Australian pre-service PE teachers' beliefs, attitudes, and intentions about teaching inclusive PE to SwD was influenced by the amount of academic preparation they received during their PE pre-service teacher training. In this study we compared two university cohorts with differing amounts of pre-service teacher training associated with SwD and found that both groups in general had favorable dispositions towards teaching SwD. Nonetheless, the university cohort who received more intensive pre-service training in teaching SwD had more favorable beliefs, attitudes, and intentions than the less-trained cohort.

For the ADHD scenario, both groups reported favorable attitudes but the LUB cohort had significantly more favorable attitudes towards teaching SwD than the UTAS cohort. This finding is interesting as attitude toward a behavior (ATB) is determined by the total set of accessible behavioral beliefs (BB) linking the behavior to various outcomes and other attributes, yet we found no significant difference associated with any other factor for this disability. Our result suggests that a more comprehensive pre-service training experience in

adapted PE can lead to more favorable attitudes towards teaching SwD, which in turn is theorised to influence intention, and finally actual behavior. This finding supports previous work in this area (Kowalski & Rizzo, 1996; Rizzo, 1984; Rizzo & Vispoel, 1991; 1992), which purports that it might be a combination of teaching experience and academic preparation that affect attitudes towards teaching SwD. We believe this to be true of our sample.

In comparison to the students from UTAS, the LUB cohort received more practical experience during their pre-service training. More specifically, not only did these students have more practicum time learning and teaching in inclusive settings, they were also required to present to their university classmates a suitable lesson for SwD that they used while on their practicum, thus providing an opportunity for application and meaning to their learning. Furthermore, they were required to develop specific activities and teaching strategies for one of the SwD in their practicum. Moreover, the LUB pre-service teachers had to work closely with this student throughout their practicum experience. This type of learning strategy potentially helped the LUB pre-service teachers learn about the abilities and needs of SwD, while not being overwhelmed with the responsibility of teaching an entire inclusive class. This progressive introduction to adapted PE might have benefitted the LUB pre-service teachers' attitudes towards the behavior of teaching an inclusive PE class.

Similar as to the ADHD scenario, both university cohorts reported favorable attitudes, intentions, and beliefs associated with teaching a student with autism. Notably BB and ATB significantly differed in this scenario. Nonetheless, the effect size for the factor of ATB did not reach our criteria to be meaningful. Regarding the BB factor the LUB cohort had significantly more favorable beliefs towards teaching a student with autism. This result might be attributed to the more comprehensive exposure to SwD training experienced by the LUB cohort. Our conclusions are congruent with previous research (Oh et.al., 2010), who reported

that BB were influenced by a more comprehensive training program which included additional special education coursework and practical experience teaching SwD. This was evident in the training of the cohort from LUB, but not the case for the cohort from UTAS. It was noted that the training received by the UTAS cohort was based on a theoretical approach as opposed to more experiential learning. This could have contributed to their lack of confidence when confronted with a scenario of having to include a child with a more severe disability, such as autism. Therefore based on their training the UTAS cohort might have perceived they were inadequately prepared to teach SwD of a more severe nature. Thus we believe that to improve pre-service PE teachers' intentions towards teaching students with severe disabilities, such as autism, requires a more comprehensive undergraduate training program.

Taken collectively, the findings of the present study suggest that a more comprehensive pre-service PE teacher training program is warranted in Australian universities. These results suggest an increase in the amount of adapted PE practicum and additional academic preparation might positively influence pre-service PE teacher's intentions towards teaching a SwD, which in turn can have a positive effect on the inclusive PE curriculum representative of 21<sup>st</sup> century schools. Notwithstanding there were limitations to this research. For example, the small sample was purposive and not random; therefore questions about the representation of the population persist. Generalisations of these data should be used in caution due to this confounding variable. Nonetheless, the data collected from the current research study has the potential to add to the paucity of adapted PE literature emanating from Australia. For one, further data analysis techniques could be applied to this data set and to future data from similar samples in terms of correlations and forward stepwise multiple regression procedures to describe relationships between demographic variables, and

to predict and analyse the interaction of pre-service teachers' intentions towards teaching SwD, respectively.

In conclusion, the results from this study have the potential to fill several gaps in the professional preparation adapted PE literature, and more importantly they might help to demonstrate the need for training Australian physical educators how to appropriately include SwD in inclusive PE classes. This might catalyse educational leaders to change policy pertaining to hiring of personnel professionally prepared to include SwD in inclusive settings. Furthermore university faculties of education that now must contend with the inclusion movement could benefit from this research as it evaluates the current accepted Australian curriculum and identifies needed professional learning areas. Ultimately the resulting university curriculum might more effectively support pre-service teachers and fulfil their requirements. Therefore, SwD might directly benefit from the projected increase in teacher training, skill level, and their confidence.

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**QUALITATIVE RECORD MANAGEMENT FOR EFFECTIVE SERVICE  
DELIVERY IN NIGERIAN TERTIARY EDUCATION SYSTEM**

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## **Abstract**

Record keeping is a strong instrument for keeping an organization alive and healthy. It is the only veritable tool for keeping the government and the nation informed as to the need or otherwise of further investment in education and other economic subsectors. It provides the direction as well as the dimension of such investment. Education has not been adequately utilized to effect national transformation and social reconstruction in the third world nations due to poor record management in the educational sector. Management, administrative, teaching and non-teaching staff need to be groomed in area for excellent education. The study examined qualitative record management skills for effective service delivery in Nigeria tertiary education system. A descriptive survey design was employed. Two hundred respondents (100 senior lecturers and 100 deputy registrars) from five institutions out of the thirty-six tertiary institutions in the South – East Geo-political zone of Nigeria were used for the study. Four research questions guided the study. Forty-three item structured questionnaire built on a 4-point scale was used for data collection. Three experts in Educational management and Educational measurement and evaluation validated the instrument. Reliability index value of 0.86 was obtained using Cronbach alpha technique. Mean and grand mean were used for data analysis. Findings revealed that the expected statutory records are available to high extend, status inadequate and obsolete, personnel possess the expected record management skills to a low extent and way forward was identified. Recommendations include regular record management workshops for both the senior academic and administrative staff.

Keywords: Records, Management skills, Service delivery, Tertiary education, Qualitative and Educational system.

## **Introduction**

Records and its management are not only essential to the existence of man but very crucial to the well-being of nations, educational system and its good performance. In spite of the cruciality of quality record management on the capacity of the nation's education ministries, boards, commissions and agencies in the successful planning and administration of education and effective resources management, it has become a problem area in the management of education, not only in Nigeria but in other developing nations. This perhaps is because of apathy, capacity gap or lack of proper understanding of record life cycle on the part of those saddled with the responsibility of records management. Those saddled with these onerous tasks are all personnel involved in the administration of educational organization. The educational administrators, administrative officers and teaching staff who are involved in one activity or the other are expected to be well equipped in records keeping skills and records maintenance culture skills. They are expected to have good knowledge of what records are, purposes of keeping records, skills for keeping and retrieving records, modern methods and technologies of managing same, the implications on the school and the educational system as a whole. The management of school organization should ensure that these skills are regularly updated in line with modern labour market. The e-record management skills are not left out.

## **What is Record?**

Records according to Obi (2010) are documental proofs of a transaction. The record can be a written document where the activities of a school or educational agency are written. Educational institutions are charged with the responsibilities of teaching, researching and provision of learner's friendly environment. In the discharge of these functions, many activities are involved and these must be recorded and properly managed for future reference and utilization. Ajayi and Oluchukwu (2011) define record management as the process of arrangement records, careful recording of the vital information in the records and retrieval when need be. Record management is therefore, the application of systematic and scientific control to all the recorded information that an organization needs to do and improve business.

## **Types of Records**

Those involved in record management must be conversant with two major types of records vital for efficient and effective national education system. There are records that are required by law in every institution and there are ones not required by law but are essential to be kept by school administrator. The records required under law are known as statutory or mandatory or obligatory records. While those not under law but are kept for efficiency and effectiveness of the school system are called non-statutory or non-mandatory or non-obligatory records.

### **Statutory**

Admission list records  
Students class attendance records  
Diary of work  
Time – table  
Lesson Notes/Plan  
Teachers Class attendance records  
Continuous assessment records  
Log book  
Punishment records  
Transfer records  
National policy on Education  
Teachers Service Manual  
Student handbook  
Staff records  
Staff condition of service

### **Non-Statutory**

Record of physical development.  
Inventory  
Stock records  
Minutes  
Schedule of duty  
Health records  
Movement books

The operation of education system in Nigeria both at the federal, state or local government levels is guided by law. The education law provides basis for statutory records.

### **Attributes of a Good Record**

Record management skills demand for good knowledge of attributes or qualities of a good record. A good record possesses the following attributes.

Easy storage	Comprehensive
Easy retrieval	Systematic
Easy understanding	guidance oriented samples
Easy interpretation	Cumulative
Easy Location	Objective
Easy access	information classification
Well packaged	Modern and up to date action taken oriented

Well packaged complete information about an event must be capable of generating further information necessary for appropriate action taking (Okolo, 2011).

### **Status of School Record Maintenance in Nigeria Educational system:**

In the three major levels of education in Nigeria, both the statutory and non-statutory records are still mainly manually maintained and are stored as hard copies. Okafor (2010) reports that one of the glaring problems facing the management of education in Nigeria is lack of maintenance culture. This is still so, even when government makes funds available for the provision of school facilities, learning and teaching resources. Examples are inadequate number of cabinets, stationeries, file jackets, computers etc. Only in H.O.Ds Deans, Directors and key administrative officers' offices are these facilities available. The available ones are in bad shapes due to poor handling and management. Adedeji (2006) laments on the negative impact of poor status of records in achieving excellent Nigerian educational system

Some of problems associated with Record Keeping in Nigeria educational system depict the status the status records include:

Incomplete and unreliable sources of data

Improper entries

Inaccurate entries

Incorrect entries/documentation

Poor/inadequate storage facilities

Unnecessary duplication of records

Organized falsification of data

Lack of training on school record keeping skills

Ignorance on the part of heads of institutions to see the need of record keeping

Non-standardized or seldom standardized documents for record keeping

Increasing retention of useful but outdated records

Lack of safe guards, on the confidentiality and accuracy of the record

Poor record classification skills (Igwe, 2004).

### **Qualitative record management skills**

Knowledge and information are modern tools for empowering individuals and groups.. School administrators need adequate knowledge and information on record management. Their professional competence should be judged by both leadership style level as well as record management skills. No one tree can make a forest. They alone cannot keep and manage records within the institutions. They should, therefore, ensure that their staff are regularly updated and enabled to acquire the new skills for record management effectiveness. Akpakwu (2012) is of the opinion that the record management updating skills should reflect.

1. filing systems – cabinet, drawers and shelves
2. use of computers and ICT technologies
3. avoiding mutilation of the records
4. classification of records
5. ensuring that top secret files are kept etc.

### **Expected Computer- Assisted- Record Management Skills**

There is no gain saying that a computer system is a useful tool for fast data processing. Computers are very dependable, versatile, secured, and modern tool for solving modern challenges. In the modern world, computer literacy helps staff to keep records electronically. Lecturers can package their lesson note in software (softcopies) and make them available as synchronous or asynchronous learning tools. Admission activities and issues should be best done online for security reasons and means of easing stress and congestion. Internet services and online activities reduce stress on administrative activities. It makes records portable and easily transferable. It also promotes accurate data, speed, and good status.

Tertiary institution being superior to the other levels is expected to take the lead in managing records for quality service delivery in the three levels.

The problem of the study is that records are not adequately being managed in three levels of education in Nigeria. Records are not adequately available and accessible at the point and time of need. Available ones appear to be in bad shapes. Unreliable data and information kept about the school system appear misleading and seem to be responsible for poor service delivery-educational system in majority of third world nations.

The paper, therefore, examined qualitative record management skills for effective service delivery in tertiary education institutions in Nigeria. Specifically, perceptions of senior lecturer and deputy registrar cadres in tertiary institutions were sought.

### **Research Questions**

1. To what extent are the statutory records available in Nigerian tertiary education institutions?
2. What are the status the records in tertiary in institutions in Nigeria?
3. To what extent does the teaching and non-teaching staff possess record management skills for quality service delivery in Nigerian tertiary education?
4. In what ways could the skills of managing records in tertiary institution been enhanced for quality service delivery in Nigerian educational system?

## Method

The study adopted a descriptive survey design. Simple random sampling technique was used to select ten institutions from a total of thirty-six public tertiary institutions in the south east geopolitical zone in Nigeria. Ten senior lecturers and deputy registrars were sampled from each of the schools using simple random sampling technique. This gave a total sample size of 200 respondents made up 100 senior lecturers and 100 deputy registers.

Researchers' self-structured 43-item questionnaire built on 4-point rating scale was employed for data collection. The instrument was subjected to content and face validity by experts and reliability index values of 0.88, 0.822, 0.80 and 0.85 were obtained. With the help of 5 trained research assistants, the researchers administered 200 copies of the instrument to 200 respondents and 100% return was made. This was used for data analysis. Mean and grand mean were used for the analysis of data.

**Table 1: Extent of availability of statutory records in tertiary institutions in Nigeria**

S/N	Item	Lecturers	Deputy Registrar	Decision
1	Admission records	3.88	4.00	HE
2	Students' progress & withdrawal records	3.06	3.35	.E
3	Staff personal records	3.25	3.22	HE
4	Log book	3.45	3.56	ETE
5	National policy on education	2.10	2.37	LE
6	Student Hand Book	4.00	4.00	HE
7	Staff conditions of Service handbook	3.86	3.95	HE
8	Payment records	4.00	4.00	HE
9	Lesson note	3.97	3.25	HE
10	Physical plant record	2.44	2.30	LE
11	School time table	4.00	4.00	HE
12	Continuous assessment records	3.64	2.55	
13	class attendance records	2.76	2.84	HE
14	NUC Minimum standard record	4.00	4.00	HE
	Grand mean	2.97	3.39	

Table 1 revealed grand mean of 2.97 and 3.39 opinion rating scores of senior lecturers and deputy registrars respectively on extent of availability of the enumerable statutory records for quality service delivery in Nigeria tertiary education. Only three out of the fourteen items scored below the 2.50, the weighted mean, indicating that the 12 items are kept and are available for quality service delivery in Nigeria tertiary education.

**Table 2: Status of records in tertiary education institutions in Nigeria**

		Lecturers	D. Registrars	Decision
1	Records are often kept in shelves/ drawers	4.00	4.00	Agree
2	Records are kept mostly in cabinets	4.00	4.00	Agree
3	Records kept depict mostly incorrect entries	2.76	2.63	Agree
4	Records are rarely electronic	3.32	3.40	Agree
5	Records are most often -falsified	3.10	3.17	Agree
6	Records are most often not mutilated	2.44	3.22	Agree
7	Records are most often accurate	2.58	2.61	Agree
8	Records are mostly in hard copies	4.00	4.00	Agree
9	Records are rarely in soft copies	3.23	3.15	Agree
10	Records are rarely accessible to users	2.88	2.73	Agree
	Grand mean	3.23	3.29	

Grand means of 3.23 and 3.29 for the senior lecturers and deputy registrars respectively indicate general agreement with the ten items as the present status of record documentation in tertiary institutions in Nigeria. The implication is that records management status is still very poor and archaic. It is characterized by inaccuracy, mutilations and absence modern tools.

**Table 3: Extent of possession of the Record management skills vital for quality service delivery in tertiary institution by staff**

S/N	Item	lecturers	Deputy Registrars	Decision
1	Skill of filing (cabinets drawers and shelves)	3.06	4.00	High Extent
2	Computer literally skill	2.19	2.41	Low Extent

3	ICT tool literacy skill	2.25	2.37	Low Extent
4	Use of audio and video cassettes skills	1.00	2.06	Low Extent
5	UBE flash or CD rom skills	2.33	2.56	Varied opinion
6	Avoiding mutilation of records skills	2.44	2.25	Low Extent
7	Skill of quality classification	2.05	2.41	Low Extent
8	Skill of keepi9ng non falsified records	2.52	2.58	High Extent
9	Skill of maintenance culture	1.76	1.33	Low Extent
10	Skill of updating records.	2.22	2.39	Low Extent
	Grand mean	2.06	2.44	

Result in table 3 revealed grand means of 2.06 and 2.44 for the two respondents. The grand means fall below the weighted mean, indicating that the staff of tertiary institutions in Nigeria possess the ten items on record management skills to a low extent. This indicates low extent possess of the skills vital for effective service delivery in the educational system.

**Table 4: Way forward for enhancing staff record management skills**

S/N	Compulsory	Senior lecturer	Deputy .registrar
1	Computer literacy education.	3.60	3.98 agree
2	ICT tool literacy education	3.70	3.86 agree
3	Sponsorship of staff attendance to conference working for the skills acquisition	4.00	4.00 agree
4	ICT centers in every institution	3.09	3.38 agree
5	Free access and utilization of ict centers	3.88	3.95 agree
6	Possession of laptop as a pre-requisite for employment	3.60	3.03 agree
7	Possession of laptop as pre-requisition for student admission	2.95	2.80 agree
8	ICT technical instructors in every department.	3.09	3.15 agree
9	Encouraging e-records	3.91	3.77 agree
	Grand mean	3.54	3.19

The results in table 4 above revealed senior lecturers and deputy registrars mean scores on a way forward to ensuring qualitative record management skills. The nine items enumerated scored above 2.50 for both senior lecturers and deputy registrars. The indication is that all the 9 items could serve as a way forward in achieving qualitative record management skills for effective service delivery in Nigeria tertiary education system.

### **Discussion**

The study revealed availability of a good number of statutory records in tertiary institutions in Nigeria. The implication is that management of tertiary institution are very conscious and obedient to education laws with respect to record keeping. The findings are in line with Igwe, (2004) that identified various relevant records that must be kept in Schools for efficiency and effectiveness. Ajayi and Oluchukwu (2002) emphasize that non-availability of these records has legal implications on both staff and the students.. Some of these records are admission list, students and staff records etc.

The findings that senior lecturers and deputy registrars perceive the ten items investigated as being the status of record keeping and record management level is not surprising. The status is described as very poor and inadequate because all the items scored above 2.50. It was observed that records are not readily accessible as at when need be, records are still mainly in hardware/copies indicating not moving with modern trends. There are still great indication of high rate of mutilation of data, and falsification of data. Records keeping are still mainly by analogue approach. No wonder Ajayi and Oluchukwu Lamented that record keeping in Nigerian educational system is mainly by the use of cabinet, shelves and drawer. Adedeji (2006) frowned at poor status of record in Nigeria educational system. He emphasized on the negative implication on effective service delivery.

Both senior lecturers and deputy registrars were of the opinion that qualitative management skills elements identified for effective service delivery are still absent. Eight items out ten items scored below the acceptable mean, implying low extent possession of the skills. The only two skills possessed by the staff to high extent are the drawers/shelves/cabinet filing system and keeping records in hardcopies. Okolo (2011) are of the opinion that both teaching and non-teaching staff need these skills in their daily activities in educational sector. He also lamented that inadequate record management skills have led to falsification of information

and mutilation hence unreliable data for quality decision making. Present day staff appears to lack the right mind and conscience as record management skills for maintaining unadulterated and impeccable records.

The findings in table 4 revealed nine strategies as well as a way forward towards qualitative record management skills needed by academic and non-academic staff for effective service delivery in tertiary education institutions. Some of these strategies include compulsory computer literacy skill, compulsory ICT tool literacy skill, and skill of owning of a laptop as a pre-requisite for academic and administrative duties. These will of course promote skills and interest in e-records. These findings are confirmation of recommendations of Ememe, Egu and **Njoku (2009)**, who identified some of the above factors as means of improving records management for effective service delivery in junior secondary schools. These also agree with the findings of **Okolo (2011)** that staff adequacy in ICT tools literacy and new technologies skills are paramount in moving with trends in promoting excellence in national education.

### **Conclusion**

Records keeping skills and maintenance culture are basic in achieving qualitative record management for effective service delivery in education system. The study examined the concept of records, types records that must be available in educational institutions at all cost. The status of record management was found grossly inadequate. Their management skills imperative for achieving effective service delivery were identified and the extent of possession of the skills were found inadequate. Solutions for attaining the needed skills were proffered as strategy or way forward.

### **Recommendations**

Based on the findings:

The management of tertiary institutions should ensure that teaching and non-teaching staff are empowered to acquire basic computer literacy skills and record management skills for quality processing of basic information, recording of every activity that relates to teaching and learning for effective service delivery.

E-records documentation of every aspect of tertiary institution activities recommended.

Government should ensure that every tertiary institution has a befitting data base and ICT centers. These should be made very accessible to both teaching and non-teaching staff including students.

Staff attendance to workshop on record management should be encouraged by making available to them sponsorship fund.

Record management skills should be part of annual appraisal items.

Every office of senior lecturers and deputy registrars should be adequately furnished with basic ICT tools necessary for encouraging e- documentations.

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**MANAGING STRATEGIC COMPONENTS OF HOME-ECONOMICS EDUCATION  
PROGRAMME FOR ENHANCED YOUTHS HEALTHY PERSONALITY  
DEVELOPMENT.**

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### **Abstract**

Youths' healthy personality development is a veritable instrument for achieving and maintaining national political and socio-economic sustainable development. Home economics education programme has been accepted and reflected in education curricula at the three major levels of education in developing nations like Nigeria. It is aimed at fostering the youths' healthy personality development for total transformation of citizens and the nation. Home economics education programme can only perform this vital role if the necessary strategic components capable of stimulating healthy personality development are adequately reflected and implemented during the teaching and learning of the subject or course. The study examined managing strategic components of home economics education programme and strategies for enhanced youths' healthy personality development in secondary schools in Nigeria. The study employed a descriptive survey technique. Four hundred and forty two respondents (407 Classroom home economics teachers and 35 Home economics zonal officers) from public secondary schools in Abia State of Nigeria were purposively selected and used for the study. Two research questions and two null hypotheses guided the study. A 4-point rating scale of researchers' made questionnaire with 35 items was used for data collection. Reliability coefficient values of 0.80 and 0.86 were obtained using Cronbach alpha technique. The data collected were analyzed using mean and t-test statistical tool at 0.05 level of significance, for the research questions and hypotheses respectively. Findings identified eight strategic components and seven integrated strategies in home economics education that could be utilized to enhance youth healthy personality development. Recommendations included: that Home-economics education programmes curriculum of secondary education in Nigeria should be reviewed to reflect the eight identified strategic components for healthy personality development of the Youths. Parents, Non-governmental organizations should partner with the government to provide learners friendly environment for implementation of identified components and strategies.

**Keywords:** Managing, Strategic Components, Home-economics, Home-economics education, Youths, Personality development.

## **Introduction**

An individual personality is usually described by a set of traits, behaviours and patterns that build character and individuality. Robert & Robbins (2004) defines personality as those images, concepts, values, behaviours, attitudes, dispositions and perceptions which a person displays in facing the challenges of life. It is a construct through which individuals make effort to maximizing their understanding of the world around them, and use such understanding to re-shape and modify them for a better healthy living in a society. The importance of a healthy personality in the life of an individual cannot be over-emphasized. Adepoju (2007) is of the opinion that a healthy personality leads people to actualize unique and fully functioning individuals. Karen (2007) observes that a healthy personality promotes optimal adulthood growth and intellectual development which ensures one's usefulness in the society.

Research reports of Karen (2007) and Macdonald (2007) recommend that personality development should be fostered through effective strategies. These strategies must be result focused action. Karen insisted that such strategies should also be result-oriented affirmative action's intended to improve existing situations. Significantly, observation and research reports of Karen (2007) made deliberate efforts to analyze several research findings and posited that personality development programmes must be based on strategic components such as educational, economic, social, career, multicultural, family, religious, sexuality, time management, personal health practices, etc. Macdonald (2007) stresses the urgency for integration between schools and government; inter-linkage networks of schools, parents, communities, private sector and students in fostering the development of healthy personality among citizens with special reference to youths. The implication is that acceptable strategies for fostering personality development must be capable of spelling out the components and integrated strategies for effective youths' personality development. Of all subjects taught at secondary education level, Home-economics education appears more appropriate.

Home-economics education is a tool for achieving in youth, the healthy personality development skills. It is one of the compulsory pre-vocational and vocational subjects taught at Junior and Senior Secondary schools in Nigeria. As a vocational subject, it does not only equip students with salient live-long skills for parenthood and economic empowerment but also ensures proper health and personality development. These qualities and skills are very exigent in the present day youths. The essence is to secure good healthy personality of tomorrow leaders for sustainable development. Okoye (2004) discovers that home-economics is a practical oriented discipline designed to equip learners with survival skills that are vital

for self-reliance and paid employment. Home-economics Education is therefore a veritable instrument for fostering healthy personality development of members of a nation through quality healthy youth development. Dibenditto (2004) identifies six combination of classroom and non-classroom action focused home-economics components that could be of good use in achieving youth personality development. These are:

- i. Multidisciplinary components
- ii. Physical environment
- iii. Social environment
- iv. Community partnership
- v. Personal skills and
- vi. Integrated services

Non- Classroom based activities appear to be stronger in youth health personality development. DiBenditto (2004) argues that non-classroom based actions produces better outcomes for students than through a traditional approach using only the in-classroom home-economics education curriculum. It should be noted that integrated and quality content- based health personality development programmes are very cost-effective. The programme requires students to be trained and educated in a number of areas in addition to class based curriculum implementation. For example, the development of appropriate sexual health practices, financial management, learning entrepreneurial skills, enhancing the social environment, linking with relevant community agencies and non-governmental organizations (modebelu and Modebelu, 2011). The importance of home economics in achieving youth personality development for sustainable national development is even more crucial in this present prevalence of youth's unruliness, militancy, Boko Haram issues, kidnapping syndrome and other horrible social ills that are menacing the entire nations with special reference to the third world nations. Anagbogu (2004) reports of many incessant cases of youth's contradictory and conflicting life value.

The issues are that present day youths in Nigerian in particular appear to be living below standards and there are high rate cases of teenage pregnancy, sexual misconduct and lots of financial conflicts. Onu (2008) observes that youths' inability to manifest, adequate entrepreneurial and resource management skills are contributory to these social ills. Other causes of youth prevalent involvement in social vices include poor academic performance, inadequate learning, sexual misconduct, mismanagement of family finance and resources, unskilled work, bribery and corruption, violence in school, work place and in families etc. (Kareen, 2007). Social ills (kidnapping, human trafficking, parents battering, fighting,

bullying, stealing, cultism promiscuity, drug abuse, excessive smoking and alcoholism which are acts of indiscipline, deviant behavior and anti-social have led to monumental loss of economic benefits, lives and property in the nation. This issue has remained a source of concern to various governmental and non-governmental bodies. Various strategies have come up, such included:

- Establishment of model secondary schools
- Formation of youth clubs
- Formation of youth empowerment centres
- Reformation of curriculum to include life skills acquisition programmes
- Training and posting of counsellors to schools
- Regular students' leadership training and seminars.

All these have been put in place to counteract among other things, youth problems in the nation. Despite these efforts, the strategies seem to have insignificant impact, probably because such are inadequate for the healthy personality development.

There is need for subject based approaches that can easily be engineered and re-engineered down to more age-appropriate citizens at secondary schools. Secondary education institutions are where majority of these teens are distributed and home economics is done in the majority of secondary schools. Home economics education programmes seem more appropriate as one of the school subjects for addressing this issue. In this case, home economics education must be made very prescriptive, preventive, and developmental delivered on a regular basis in schools.

In addition to educational seminars and committees held, budget and security system have to greet extent been fortified and severe punishment meted to culprit.

The problems put in question form is what strategic components of home economics education programme should be utilized to foster youth's healthy personality development in secondary schools in Nigeria.

The study aimed at identifying viable strategic components of home-economics education programme for enhancement of youths' health personality development in secondary schools in Abia state of Nigeria.

### **Research Questions/Null hypotheses.**

1. What are vital strategic components of home economics education programme that could utilize as strategies for fostering youth healthy personality development in secondary schools?

2. To what extent have these identified components been utilized to for youths personality development (YHPD) on secondary schools in Abia State.
3. What other integrated strategies could be applied to achieve youth healthy personality development skills through home economics education programme.

**HO<sub>1</sub>:** Mean ratings of home economics education teachers did not significantly differ from zonal home economics officers on strategic components needed to be emphasized in teaching and learning home-economics for YHPD in secondary schools in Abia State.

**HO<sub>2</sub>:** Mean ratings of home economics education teachers did not significantly differ from zonal home-economics officers on the integrated strategies development components.

## **METHOD**

The study adopted a descriptive survey design. It collected information from both teachers and zonal home economics officers concerned with teaching and learning of home economics at secondary education in all the 23 local government areas of the 7 education zones in Abia State of Nigeria. The data collected was meant to identify some strategies for fostering youth health personality development.

The population of the study consisted of 442 respondents (40.7 classroom teachers and 35 education officers) from 251 public secondary schools in Abia State.(source: Abia State management Board 2010). All the 442 respondents were selected and used for the study because the population was small. This helped to reduced errors and bias hence there was no sampling. Researchers' self-developed structured questionnaire titled Youths Enhanced Healthy Personality Development Strategies (YEHPDS), built on 4 point Likert –type scale was used for data collection. Part A of the questionnaire sought information on respondent's job location and status while Part B has 39 items (section A with 24 items on home economics education strategic components for youths healthy personality developments and section B has items on the integrated strategies for achieving YHPD. The instrument passed through face and content validity under two experts from Home Economics Education, Guidance and Counseling and Educational Measurement and Evaluation from Michael Okpara University of Agriculture, Umudike. Suggestions were reflected in the final draft. Cronbach alpha coefficient technique was used to test the for reliability of the instrument. Copies of the instrument were distributed to 15 teachers and 10 zonal officers of home economics respectively from 5 schools and Zonal Education Authority in Enugu State of Nigeria.

Their responses were coded and subjected to statistical analysis. Alpha Coefficient values of 0.81, 0.74 and 0.80 were obtained.

The researchers with the help of two trained research assistants administered 447 copies of the instrument to 447 respondents within five days in a week. 100% return was made and used for data analysis.

Mean computation and student test statistical tool were to answer the three research questions and test the two null hypotheses at 0.05 level of significance respectively. The decision rule for interpreting the mean scores of the items for the research questions was 2.50 and above for regarding an item agree or acceptable strategy for youth's healthy personality development. Mean score below cut off point of 2.50 indicates disagree or rejection of the item as strategy. Accept the null hypothesis if t-critical value is greater than the t-calculated value and visa vice.

#### Results.

Table 1: Mean ratings of Home Economics Education teachers and zonal officers on the strategic components for youth healthy personality development.

S/N	ITEM	TEACHERS	ZONAL	REMARKS
		$X_1$	OFFICERS $X_2$	
1	Family Planning	2.08	1.89	Disagree
2	Family resource management	3.00	3.05	Agree
3	Entrepreneurial skills	3.98	3.86	Agree
4	Careers and life management	3.77	3.42	Agree
5	Time management	3.81	3.92	Agree
6	Environmental hazards management	3.10	3.00	Agree
7	Societal values/norms	2.76	3.20	Agree
8	Stress management	2.05	1.00	Disagree
9	Dietal practices and eating habit	2.83	2.57	Agree
10	Personal hygiene	3.25	3.41	Agree
11	Sexuality Management	4.00	4.00	Agree
12	Drug/substance abuse	3.55	3.42	Agree
13	Dating practices	1.84	2.25	Disagree
14	HW/AIDS education	3.57	3.04	Agree
15	Body management	3.49	3.26	Agree

Result in table 1 reveals mean scores above 2.50 for 12 out of the 15 items indicating classroom teachers and zonal officers' general acceptance of the 12 items as strategic components to be emphasized in home economics education for youth's healthy personality

development in secondary schools in Abia State. The only three items that scored below 250 are stress management, family planning and dating practices. The implication is that the three items should not serve as strategic components for youth personality development.

**Table 2:** Extent of application of these components in Home Economics for fostering youth healthy personality development.

S/N	ITEM	TEACHERS	ZONAL OFFICERS	REMARKS
		X <sub>1</sub>	X <sub>2</sub>	
16	Family Planning	2.33	2.26	Low extent
17	Family resource management	2.41	2.08	Low extent
18	Entrepreneurat skills	3.45	3.20	High extent
19	Careers and life management	3.63	3.84	High extent
20	Time management	1.67	1.71	Low extent
21	Environmental hazards management	2.13	2.23	Low extent
22	Societal values/norms	2.00	1.89	Low extent
23	Stress management	2.44	2.15	Low extent
24	Dietal practices and eating habit	2.88	2.76	High extent
25	Personal hygiene	3.56	3.56	High extent
26	Sexuality Management	2.08	2.32	Low extent
27	Drug/substance abuse	4.97	2.22	Low extent
28	Dating practices	2.34	1.88	Low extent
29	HW/AIDS education	2.21	2.00	Low extent
30	Body management	2.14	2.00	Low extent

Table 2 above reveals mean responses of classroom teachers and zonal officers on extent of application of the 15 enumerated strategic components through Home Economics. Except four items all the rest of 11 items scored below 2.50 indicating the items low extent application through Home-economics education for youths healthy personality development. The only 4 items accepted to be applied to a high extent are entrepreneurial skills, careers and life management, dietal practices and eating habit and personal hygiene.

**Table 3:** Mean rating of home economics teachers and zonal home-economics officers on integrated strategies for a youth health personality development.

S/N	ITEM	TEACHERS $X_1$	ZONAL OFFICERS $X_2$	REMARKS
31	Consulting with cooperate organization to organize home economics based seminars and talents hunts for students	3.83	3.90	Agree
32	Working closely with class prefects to identify students with behavioral problems during home economics lessons	3.65	3.86	Agree
33	Close cooperation with home economics teachers, form teachers and counselors in providing guidance services on personality development to students	3.56	3.66	Agree
34	Using inter class debates to empower youth to argue about home economics based social and healthy issues.	3.63	3.76	Agree
35	Using students focused activities (i.e. Assembly presentation by home economics students role play)	3.68	3.36	Agree
36	Integrating external services (experts in food & nutrition, clothing etc) into schools home economics programme.	3.50	3.48	
37	Using local community a resource to provide speakers to both students and teachers about home management etc.	3.86	3.91	

In table 3. All the 7 items scored above 2.50. this implies that all the respondents (teachers and zonal officers agreed with the items on proposed integrated strategies for achieving youths healthy personality development in students in secondary schools in Abia State of Nigeria.

**Table 4:** t-test Analysis summary on mean ratings of Home-Economics education teachers and zonal officers mean scores on the components for effective youth healthy personality development.

Group	N	X	sd	t-calc	df	t-crit
Home economics teacher	407	3.10	1.70	0.04	440	1.94
Home economics zonal officers	35	3.02	1.48			

In table 4, the calculated t-value of 0.04 is lower than decision from table 4 reveals null hypothesis was upheld, indicating no significant different between home economics teachers.

In table 4, the calculated t-value 0.04 is lower than the critical value of 1.94 at 0.05 level of significance. The null hypothesis was upheld indicating no significant difference between home economics teacher and zonal officers on the strategic components for youth's healthy personality development of youths in secondary schools.

**Table 5:** t-test Analysis summary on mean ratings of Home-Economics education teachers and zonal officers on the integrated strategies for youth healthy personality development.

Group	N	X	sd	t-calc	df	t-crit
Home economics teacher	407	3.48	1.52	0.03	440	1.94
Home economics zonal officers	35	3.45	1.164			

Result in table 4 reveals a calculated t-ratio of 1.94 at 0.05 significance level. The null hypothesis accepted. This indicated that there is no significant difference between the mean ratings of the teachers and zonal officers on the integrated strategies for effective healthy personality development through home economics education programme. Discussion

The study identified twelve strategic components of home economics education that would be of great relevance in youth personality development through home economics education programmes. Some of these vital components are: Family resources management, entrepreneurial skills careers and life management, time management environmental hazards management, societal norms / values, vital practices and eating habits, personal hygiene, sexuality management drug abuse, HW/AIDS education and body management. These is in confirmation of Okoye (2004) that observed that home economics is a practical –oriented discipline for equipping the learners with survival skills for self – reliance. There is no doubt that entrepreneurial skill, family resource management skills etc. are lifelong skills for healthy personality development. These skills are very vital in molding the personality of Nigerian future hope and leaders. Modebelu and Modebelu (2011) emphasize the importance of sexuality and moral development of Nigerian adolescents. The implication is that national whose Youths have adequate healthy personality is likely to manifest self-reliance, less extreme poverty and hunger as Millennium development Goals aim, such nation will enjoy healthy responsible citizenry, high level economics development etc.

The findings of the study recorded these strategic components of home economics education recommended for youths' healthy personality are applied to a low extent in secondary schools in Nigeria. The low application could be due to non-recognition of the identified

components as being relevant to personality development by education curriculum planners as well as classroom teachers who apply the components to a low extent in the process of teaching and learning of home economics education. This could also be responsible for so many social ills in the developing world such as Nigeria. Any nation with majority of its citizens lacking healthy personality will be prone to incessant undesirable social – political and socio –economic activities. In support of the above Onu (2008) and Anagbogu (2004) report, that many youth in Anambra state of Nigeria were living with contradictory and conflicting values and standard. Anagbogu observes in addition a high rate teenage pregnancy social misconduct, low personal hygiene etc. Onu discovers that these youths manifested lack of entrepreneurial and resource management skills. There is urgent need to emphasize the inclusion of these components in the curriculum as well as effective implementation in the teaching and learning of such lifelong health personality development skills.

Null hypothesis one showed that there is no significant difference in the opinion of home economics teachers and home economics zonal officers in the various zonal offices of Abia state Education commission on the identified strategic components relevance in achieving Youths healthy personality development. This agreed with Modebelu & Modebelu (2011) who reports that inclusion of these components in the management of sexuality adolescents and moral issues will enhance healthy personality development of youths across the nation.

Null hypothesis two also indicates no significant difference in the opinion of the teachers and zonal officers. In line with this finding, Mamman, and Joel- Pweden (2007) were of the view that healthy personality development should not be left you counselors a lone but should receive the support of home- economics teachers, government, parents, non-governmental associations, students themselves and corporate bodies.

The findings of study also identified seven items that could serve as integrated strategies in utilizing home economics to foster youth's healthy personality development in secondary schools in Nigeria as well as other developing nations. The identified strategies agreed with MacDonald (2007) who stresses the urgency for integration between schools and government, inter-linkage networks of schools, parents, communities, private sectors, and students in the achievement of youth's healthy personality. The seven identified integrated strategies included consultation with cooperate organization to organize home economics based seminars / talent hunts or students, utilizing students focused activities such as morning assembly presentation or role play by students etc. The integrated strategies from the study

also in line with the suggestion of DiBenditto (2004) which comprised of classroom and non-classroom active focused components such included: Multidiscipline any components, physical environment, personal skills etc.

### **Conclusion**

Home- economics education is a tool for achieving the youth healthy personality development skills through effective utilization of strategic components and integrated strategies. The twelve vital strategic components that must be emphasized in the teaching and learning of home-economics have been identified in this study. The components were utilized to a low extent presently in secondary school in Abia state of Nigeria. Seven integrated strategies were also identified. Effective application of these identified components and strategies will go a long way to enhance Nigerian Youths healthy personality towards national sustainable development.

### **Recommendations**

Based on the findings of the study, the following recommendations were made:

Home-economics education programmes of secondary schools in Nigeria should be reviewed to include the twelve identified strategic components that promote healthy personality development of Youths.

Government, Parents, Non-governmental organization should partner to provide learners friendly environment for implementation of identified components and strategies.

Teacher preparation institution should be re-positioned to equip Homeec teachers with the necessary technical skills of making healthy personality development in schools, skills oriented.

Home economics teachers should endeavour to emphasize multiple concepts such as sexuality management, body image family resource management etc.

Regular sponsored workshops / conferences / seminars for home economics teachers should be encouraged by various stake holders in education.

Home economics teachers should endeavour to haise with media houses to present value focused jingles debates etc. They should also work with cooperate organizations to organize seminars and talent hunts for students.

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To Whom It May Concern:

Here is the information for the conference my submission ID number is 167 should you need any additional information please email me or call 951-331-9706 thank you so much!!

1. Title of Submission **Building Partnerships with Communities in Our Schools**
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6. This case study researched a comprehensive high school with an enrollment of 2300 students and 120 teachers and staff members was conducted. Investigating school communities and how to build an effective community relationship between schools and the school community members. Questions posed by this case study included: What do we mean by communities? Why is it important that communities connect with schools and schools with communities? How does the community history affect schools in that community. Findings proved efforts to improve academic achievement must be accompanied by efforts to improve community involvement and Community Building of the social conditions in which they live. Providing leadership from community officials and the local school board will be of critical importance to the collaboration movement.

**TITLE:** Engaging Students in the Science and Engineering Practices of the Next Generation Science Standards (NGSS) with Computer Supported Collaborative Science (CSCS)

**TOPIC:** Science Education

**PRESENTATION FORMAT:** Workshop

**DESCRIPTION:** Computer Supported Collaborative Science (CSCS) is a methodology that uses collaborative cloud-based resources to engage all learners in the collection, analysis, and interpretation of individual data in the context of whole-class data. CSCS turns hands-on classroom activities into more authentic scientific experiences -- shifting the focus from cookbook data collection to thoughtful data analysis required by the Next Generation Science Standards (NGSS).

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## **Engaging Students in the Science and Engineering Practices of the Next Generation Science Standards (NGSS) with Computer Supported Collaborative Science (CSCS)**

### **I. SUBJECT / PROBLEM**

In 2012, The National Research Council, representing the National Academies of Science, Engineering, and Medicine, published “*A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas*” as the first step in a process to create national standards for K-12 science education. Through a collaborative, state-led process science standards are being developed that will be based on the *Framework*. It is anticipated that the vast majority of states will adopt the *Framework* and the standards, currently known as the *Next Generation Science Standards (NGSS)*.

The National Research Council states that “The overarching goal of our framework for K-12 science education is to ensure that by the end of 12th grade, all students have some appreciation of the beauty and wonder of science; possess sufficient knowledge of science and engineering to engage in public discussions on related issues; are careful consumers of scientific and technological information related to their everyday lives; are able to continue to learn about science outside school; and have the skills to enter careers of their choice, including (but not limited to) careers in science, engineering, and technology.” In addition, the NRC states that “Currently, K-12 science education in the United States fails to achieve these outcomes, in part because it is not organized systematically across multiple years of school, emphasizes discrete facts with a focus on breadth over depth, and does not provide students with engaging opportunities to experience how science is actually done. (NRC, 2012).

The *Framework* recommends that science education be built around three dimensions: (1) scientific and engineering practices, (2) cross cutting concepts that have common application across fields, and (3) core ideas in four disciplinary areas: physical sciences; life sciences; earth and space sciences; and engineering, technology, and applications of science. The *Framework* draws upon ideas set forth in earlier reform documents such as *Project 2061* (American Association for the Advancement of Science, 1993), and the *National Science Education Standards* (NRC, 1996) but is destined to be more influential

since most states have already adopted the *Common Core Standards* (National Governors Association, 2012) in mathematics and English and have expressed interest in adopting the *Next Generation Science Standards* as well. The *Framework* and *Next Generation Science Standards* will provide a roadmap for reforming science education and will create a need for new teaching strategies to traverse this map. Fortunately, recent advances in collaborative cloud-based computing have provided the technological tools which allow the implementation of new teaching methodologies by which many of these goals can be reached more effectively than previously possible.

## **II. DESIGN**

*Computer Supported Collaborative Science* (CSCS) is a teaching methodology that uses collaborative web-based resources to engage all learners in the collection, analysis, and interpretation of individual data in the context of whole-class data. CSCS fosters scientific inquiry by using collaborative online resources to assess prior knowledge, collect and analyze student ideas, data, and comments, and provides instructors the opportunity to perform continuous formative assessments to inform and reform their own instruction. CSCS turns hands-on classroom activities into more authentic scientific experiences -- shifting the focus from cookbook data collection to thoughtful data analysis.

The CSCS model engages all students in learning science and provides experience in how science is actually done. The CSCS model provides a pedagogical framework for science teachers seeking to implement the goals of *Framework*.

- **Prior Knowledge and Student Engagement.** Often, science lessons ignore prior knowledge and cultural influences, complicating the challenge of teaching in a diverse classroom (Brown, 2004). CSCS uses online surveys to assess students' initial understanding of new topics. This allows teachers to learn about preconceptions to be addressed and helps students to become aware of their naïve conceptions. Students remain engaged when they are regularly asked to commit responses to formative assessment. (Herr et.al, 2012)
- **Collecting large data sets.** In traditional classes, lab groups collect data independent from other lab teams. By combining data sets online, students recognize patterns that are only visible when students pool their data. Students compute averages, plot data together and gain firsthand experience for what it means for an experiment to be repeatable.
- **Focusing on interpretation.** In verification labs, experiments stop once data are collected because the results are known before they start. In CSCS, students post collaborative lab reports online linking to relevant data and graphs. Shared conclusions allow for further discussion and the consensus building that is essential for inquiry (Berland & Reiser, 2009). Automated graphing of data using CSCS tools can reduce the load on working memory, allowing for more cognitive resources to be devoted to data analysis (Hmelo-Silver, Duncan, & Chinn, 2007).

## **III. ANALYSIS & FINDINGS**

The following example from Mr. Arias' biology class illustrates how the CSCS model can transform an existing classroom laboratory activity into a student-centered collaborative learning experience. Students are exploring the function of enzymes by performing a classic hands-on lab using liver (which contains catalase) and hydrogen peroxide. The lab is conducted before enzymes are fully explained, providing an opportunity to explore the characteristics of enzymes.

On the first day, students begin by discussing in groups what they believe are the function of enzymes in the human body. They brainstorm variables they can explore in the chemical reaction (e.g. temperature, pH, volume, etc.). As teams, they use laptops to

post their suggestions using an online spreadsheet. Each student then ranks the suggestions using instant online survey. After consulting the survey results, each team chooses three variables to investigate and discusses the best procedure for making measurements, eventually posting their procedure to the class wiki. Mr. Arias asks students to make predictions about which variables they think are most likely to affect enzyme activity. Rather than calling on individual students to share their ideas in the class discussion, he makes them all commit their predictions to an online survey form. As teams conduct the experiment, they record data in an online spreadsheet side-by-side with other lab teams. Using cloud-computing tools like Google Docs, all teams can edit the file simultaneously from different computers throughout the room. The bell rings and students must leave.

Even though the activity itself has been interrupted, students return to their stored work the next day. Their predictions, procedures, and data are all well organized online and Mr. Arias begins the day's discussion by displaying class data using a web-based graphing tool. Immediately, students recognize that certain data points are outliers. Students turn to the team responsible for contributing the outliers and ask them to explain their protocol for collecting their data. The entire class speculates about causes for variations. They record their ideas in a threaded online discussion forum. Following the discussion, each lab team writes a lab report that explains their data, how it connects to the class data set, and generates conclusions about enzyme activity. Mr. Arias reminds students how scientific findings rely on finding patterns in data as he highlights how their contributions to the class spreadsheet have allowed them to evaluate a larger data set.

The third day's quiz (another online form) asks students questions about the function of enzymes taken from their collaborative online lab reports. Mr. Arias then explains how enzymes work and enhances his explanation with a few short video demonstrations of how certain variables such as temperature affect the breakdown of catabolites such as hydrogen peroxide. He directs students to an online simulation of catalase activity to see how different variables affect the reaction. Students are then asked to compare their current understanding of enzymes to what they initially thought on day 1 through an online form. Mr. Arias monitors student responses as they are submitted, formatively assessing student understanding so that he may plan his next steps to insure student understanding.

Note: Fifty middle and high school science teachers have participated in a two-week intensive CSCS workshop at California State University Northridge. These teachers will be implementing CSCS activities in Fall 2013. We have employed an external evaluator to investigate the effectiveness of the CSCS model in addressing Dimension 1 of the Next Generation Science Standards (NGSS) and plan to present our findings at the NARST meeting, if our paper is accepted.

#### **IV. CONTRIBUTION**

The CSCS model provides a mechanism for engaging students in the scientific and engineering practices that are common to all aspects of science, technology, engineering and mathematics (STEM) education, listed in *Dimension 1* of the *Framework for K-12 Science Education* (NRC, 2012):

**(1) Asking Questions and Defining Problems** – Secondary students struggle to develop researchable questions for inquiry activities or science fair projects. Fortunately, teachers can guide students through this process with much greater efficiency using the CSCS model. For example, a teacher can solicit research questions surrounding a particular phenomenon. Students enter their questions into a blog and simultaneously see the ideas of their classmates. The teacher then highlights specific questions and illustrates how they may be refined into researchable questions. Students are then asked to post suggestions for their peers. The teacher monitors all activity and further clarifies the process of formulating researchable questions and defining researchable problems. Students learn by seeing numerous examples edited and

refined in the collaborative environment of the blog.

**(2) Developing and using models** – A key difference between novice learners and expert learners is that “experts notice features and meaningful patterns of information that are not noticed by novices.” (Bransford et. Al., 1999). The NRC recognizes the significance of pattern recognition by placing it as the first *cross-cutting concept* in *Dimension 2* of the *Framework* (NRC, 2012). Novice learners become expert learners by modeling the metacognitive strategies of experts. Novice learners gain metacognitive skills as they watch teachers describe their use of pattern recognition in the development of models and hypotheses. Collaborative cloud-based documents allow students to see patterns in class data as well as patterns in the way their peers develop models.

**(3) Planning and carrying out investigations** – In *America’s Lab Report*, The National Research Council states that “Laboratory experiences provide opportunities for students to interact directly with the material world (or with data drawn from the material world), using the tools, data collection techniques, models, and theories of science.” (NRC, 2006b). According to the NRC, “The quality of current laboratory experiences is poor for most students.” The NRC concludes that one reason for poor laboratory experiences is insufficient time to plan and carry out investigations. The CSCS model makes planning and conducting investigations simpler by instantly aggregating all student data. In a traditional student laboratory experience, a lab group of 2-3 students must complete all aspects of investigation by the end of the period and the grade they earn will be directly dependent upon their ability to accomplish this. Students get little experience planning investigations because teachers must design them so they may be completed within the allotted time. By contrast, the CSCS model allows investigations to be conducted using whole class data. Students complete an investigation by examining entire class data. Using the CSCS model, teachers can divide data collection tasks among various lab groups so that the class can collect the necessary data even if individual lab groups are unable to do so.

**(4) Analyzing and interpreting data** - The CSCS model excels in teaching students how to analyze and interpret data. D’Alessio and Lundquist (2012) found that after using frequent CSCS activities, even students with limited science background begin to see data like experts see it. Students “made significant gains in data interpretation skills compared to a control group that did more traditional laboratory activities without the public comparison of data that defines CSCS.”

**(5) Using mathematics and computational thinking** - The CSCS model provides numerous opportunities to encourage the use of computational thinking. Rather than viewing an isolated set of data, students must use statistics to evaluate whole class data. Teachers include column headers in electronic quick-writes to perform basic computations on student input. (An electronic quick-write is a collaborative cloud-based spreadsheet in which columns represent individual questions and rows represent individual responses to those questions. (Herr et.al., 2012)) For example, if the teacher asks students to input their resting pulse rate, designated cells instantly report the maximum, minimum, and average pulse rates for the class while pre-defined graphs plot these statistics in a corresponding worksheet. Students learn to perform spreadsheet calculations by entering their own formulae in cells as prompted by their instructors. Rather than walking around the class to see student calculations, the teacher simply scans the spreadsheet and formatively assesses the computational reasoning of their students.

**(6) Constructing explanations and designing solutions** - Historians argue that Thomas Edison’s greatest invention was not the incandescent light bulb, motion pictures, recorded music, nor any of the other 1090 inventions for which he held patents, but rather the modern research laboratory in which he assembled top scientists and engineers to collaborate in the design and development of new products. Edison did not invent all of the items for which he received patents, but rather created an environment in which top scientists and engineers could collaborate to design solutions (Mintz, 2012). In a similar fashion, CSCS creates an environment where students work simultaneously on collaborative online lab reports, drawings,

spreadsheets, diagrams, photo albums, concept maps, presentations, wikis, and websites to construct explanations and design solutions.

**(7) Engaging in argument from evidence** - CSCS highlights the significance of evidence in learning science (d'Alessio, 2012; Herr et. al., 2010a, 2010b, 2011). In a traditional science classroom, students argue only from their own data, but in a CSCS classroom, students examine entire class data before generating hypotheses or making conclusions. Students learn to discern good data from bad data (d'Alessio, 2012) and learn the importance of patterns, trends, statistics, and outliers. Just as professional scientists evaluate their results in light of evidence from other laboratories, so CSCS students evaluate their results in light of evidence from other students.

**(8) Obtaining, evaluating, and communicating information** –CSCS creates an information-rich environment in which students work. Unlike a traditional classroom in which a single student is called upon to answer a question asked of the class, CSCS students are expected to answer all questions posed by the teacher all of the time. Rather than raising hands, students input their answers to the collaborative spreadsheet that both teachers and students read. Collaborative online documents provide the opportunity for the teacher to perform continuous formative assessments of student understanding (Herr et.al, 2012) while allowing students to see the input of their peers. As students respond to teacher prompts, they communicate not only to the teacher, but also to their peers. CSCS students respond in writing to each classroom question, and are also asked to evaluate the information communicated by their peers.

## **V. GENERAL INTEREST**

The National Research Council has stated that current science education in the United States “does not provide students with engaging opportunities to experience how science is actually done.” (NRC, 2012). The CSCS model, employing new collaborative web-based document technology, provides students and teachers the opportunity to readily collect and analyze large sets of data from multiple lab groups and class sections. Such resources may be used to create an environment that more closely resembles the collaborative environment of a professional scientific community in which researchers develop hypothesis and explanations in light of their own findings and those of their colleagues. The CSCS Model emphasizes scientific inquiry in an evidence-rich, collaborative environment that places greater emphases on interpretation, evaluation, and explanation. The CSCS model replaces traditional “cookbook” verification activities in which students work in isolated lab groups with discovery activities using student-generated procedures working in collaboration with multiple lab groups. The CSCS model provides an opportunity for students to experience how science is actually done by engaging in the scientific and engineering practices advocated in Dimension 1 of the Framework, namely (1) Asking questions (for science) and defining problems (for engineering) (2) Planning and using models

investigations

computational thinking

solutions (for engineering)

evaluating, and communicating information.

Engaging in argument from evidence

(3) Planning and carrying out investigations

(4) Analyzing and interpreting data

(6) Constructing explanations and designing solutions

(8) Obtaining, evaluating, and communicating information.

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**TITLE:** Using Cloud-Based Collaborative Resources to Perform Continuous Formative Assessment (CFA)

**TOPIC:** Educational Technology

**PRESENTATION FORMAT:** Workshop

**DESCRIPTION:** Workshop participants will learn how to use free cloud-based collaborative online documents to perform continuous formative assessments of student understanding during instruction.

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## Using Cloud-Based Collaborative Resources to Conduct Continuous Formative Assessment

**Abstract:**

Workshop participants will learn how to use free cloud-based collaborative online documents to perform continuous formative assessments of student understanding during instruction.

**The need for better formative assessment**

Schools and universities have been encouraged to develop a “culture of assessment” to provide evidence on the effectiveness of instructional programs (Weiner, 2009). Although our “culture of assessment” has produced a wealth of literature, legislation, initiatives, reforms, and professional development, the vast majority has focused on assessment *of* learning (summative assessment) rather than assessment *for* learning (formative assessment). Formative assessment has been defined as “a process used by teachers and students during instruction that provides feedback to adjust ongoing teaching and learning to improve students’ achievement of intended instructional outcomes” (Popham, 2008). “What makes formative assessment formative is that it is immediately used to make adjustments so as to form new learning” (Shepard 2005).

Formative assessment is not a new concept, and any teacher that adjusts his or her teaching during instruction on the basis of evidence of student understanding and performance is employing formative assessment. Most teachers would agree that formative assessment is very important, but how does one accurately assess student comprehension and performance during a science class session?

Educators have adopted a variety of techniques to perform formative assessments. A group of physics educators introduced the modeling method for physics instruction in which students diagram physics problems on miniature whiteboards and hold them up for their teacher and peers to critique (Wells et. Al, 1995). Others advocate quick-writes (Rief, 2002; Clidas, 2010), science notebooks (Clidas, 2010; Roberson, 2010), and the use of audience response systems (Kay et. Al., 2009). All these techniques have their merits and provide opportunities for teachers to check for understanding and adjust their instruction accordingly, but all have significant limitations. The modeling technique is excellent, but once students erase their boards, the record of their understanding vanishes. Quick-writes and science notebooks provide a log of student understanding and performance, but it is not possible for teachers to see all quick-writes or notebooks as they are written, and therefore any adjustment to instruction is postponed until the subsequent day. Audience response systems have the advantage of providing immediate feedback, but student input is generally limited to true/false and multiple-choice responses. If science teachers are to adjust instruction to meet student needs, they must collect and analyze student responses as they are made. Fortunately, synchronous collaborative documents provide opportunity to do just that.

### **Continuous Formative Assessments (CFA) in science instruction**

The authors have developed a teaching technique that employs synchronous collaborative web-based documents to perform continuous, real-time formative assessments of student understanding so that science teachers can adjust their instruction to address the immediate needs of their students. The technique provided in this workshop has the potential to engage *all* learners *all* of the time as they provide feedback, data, quick-writes and analyses in response to instructor prompts. Using our model, teachers have the opportunity to observe all student contributions as they are made.

Our continuous formative assessment (CFA) model has been made possible by the development of free collaborative web-based spreadsheets, documents, presentations, and drawings (Herr et. al., 2010a,b; 2011a,b, 2012). Using the CFA model, teachers develop online documents and share editing privileges with their students. Teachers provide prompts to which students simultaneously respond on the same document. For example, using an online spreadsheet, teachers enter student names in column one and pose a question in the header of column two. The cells in column two become highlighted when students start to enter their responses, providing the teacher with information regarding which students are composing answers and which need more time. Once the teacher has determined that there has been a sufficient response, he or she asks students to press the “enter” key, and instantly the cells are populated with student responses. Color-coding and roll-over names identify those who have made contributions and deters students from entering data in cells other than their own.

As the students enter their responses, teachers scan the developing response table to assess student understanding and adjust instruction accordingly. For example, if few students provide an adequate written response, a teacher may pose a new question in a simpler format such as multiple-choice. By programming the spreadsheet appropriately,

the teacher obtains statistical data to indicate the percentages of students that understand or have specific misconceptions. The teacher freezes the name column (row header) and the question row (column header) and opens a new column next to student names. This insures that each current response is adjacent to the student's name while simultaneously storing previous responses in columns to the right. The teacher opens a new worksheet for each day and tracks student performance and understanding by tabbing through worksheets from previous lessons.

Preliminary data suggests that the CFA model using collaborative documents to make formative assessments significantly enhances student engagement and understanding. Professors who have used this model in teacher preparation programs report greater student engagement in lessons and greater personal satisfaction with assessments of student progress. Bandura (1997) and Zimmerman (2002) suggest that formative assessments permit students to express themselves and develop a sense of self-efficacy, a key requirement for the development of autonomous learning strategies. Polanyi (1967), Schön (1987), and Rogoff (2001) emphasize the formative and reflective purpose of student discourse and encourage an open community of learners where ideas and opinions are exchanged so that students can co-construct their understanding. The CFA model provides an environment where such discourse can take place, but unlike a traditional science classroom where certain students dominate, all students are on an equal footing since all have access to the same document for their contributions. In this session we provide hands-on experience with the CFA approach to using collaborative online documents to enable continuous formative assessment.

### **Value of workshop activities**

New collaborative web-based document technology provides the opportunity to instantly collect and analyze large sets of data from multiple students, groups and class sections with speed and accuracy. Teachers can learn to use tools like Google Docs & Sites to turn traditional classroom activities into student-centered inquiry and discussion. CFA helps teachers create a classroom environment that mirrors the collaborative environment of a professional learning community. Teachers will create classroom activities in which students analyze whole-class data using wikis and collaborative spreadsheets, and work with peers to reach consensus and produce collaborative reports on their conclusions. These activities help students gain an understanding that the learning enterprise requires collaboration, independent verification, and peer review. In this workshop, participants are introduced to a range of collaborative web-based activities in which they continuously monitor student ideas and input so that they can adjust their instruction to meet student needs. Those who participate in this workshop will leave with an ability to use free cloud-based collaborative tools to perform continuous formative assessments of their students so that they can adjust their instruction accordingly.

### **Workshop Activities -**

During this ninety minute workshop, participants will learn how to use the CFA model by participating first as a student and then as the instructor. We will use collaborative documents to collect data from various inquiry activities. Participants will then analyze the entire data set collaboratively. We will discuss the best practices of collaborative

inquiry as well as professional development strategies. We will conclude by having participants brainstorm ways the CFA model can be used to help teachers improve formative assessment of all learning activities.

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**Title of the paper: Nigerian pre-service Science Teachers' Self-perceptions of acquired pedagogical knowledge and skills after teaching practice exposure**

**Topic Area: Science Education**

**Presentation format: Paper Session**

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**ABSTRACT**

*The purposes of this study were to investigate the teaching competencies acquired and those not acquired by science teachers-in-training after exposure to teaching practice. The investigator used a fifty-six item questionnaire, labeled as Perception of the Acquired Pedagogical Knowledge and Skills Scale (PAPS), to elicit information from two hundred and ten pre-service science teachers in south-west geo-political zone of Nigeria. A panel of (5) science educators determined the content validity of the questionnaire. The sample of science education undergraduates were drawn from three (3) randomly selected universities using stratified random sampling technique. The pre-service teachers were required to rate their performance level on each teaching competence on a five-point Likert scale ranging from "high performance level" to "no performance level" with "average performance level" as the pivotal point of the scale. Following that, the mean of each competence item were computed. Any competence statement that had a mean rating of less than 3.00 was considered to be of low performance cadre, since the mean value of the scale was 3.00. The findings of the study indicate that most of the teaching competencies that teachers-in-training have not acquired fall under theme 1 (planning instruction), theme 2 (implementing instruction), theme 3 (evaluating instruction), and theme 7 (integrating technology and media in the classroom). The study also revealed that pre-service science teachers demonstrated proficiency in reinforcing learning, managing classroom, building professional links with colleagues and understanding learners' development. Based on the findings of this study, it was recommended that the principle of collaborative approaches for teacher learning should be incorporated into the teacher training program and that regular follow-up workshops aiming at developing Pedagogical Content Knowledge (PCK) of pre-service science teachers should be scheduled as needs arise.*

**Keywords:** pre-service science teachers' self-perceptions, microteaching, teaching skills, practicum, teacher training programmes

# **The Role of the Facilitator in Learning Management Systems**

**Hawaii International Conference On Education 2014**

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## **Abstract**

With the growth of technology in online education, Learning Management Systems are now seen as a forum for students to undertake discussions regarding their teaching and learning. However, the effectiveness of the use of this learning technology can be debatable. The aim of this descriptive study was to explore student nurses' use of online discussion forums in an undergraduate nursing research unit. Two sources of data were collected. In Phase one of the research, a descriptive survey consisting of demographic data and closed and open-ended questions were used. This provided both quantitative and qualitative data. Phase two was concerned with the collection and content analysis of students' discussion forum postings. This involved analysing the qualitative data for themes as well as analysing statistical data relating to forum use.

A key finding of this study was that participants identified a lack of facilitation and instruction as a major factor in their use of the discussion forums. Responses indicated that the educator did not encourage or participate in the online discussions. Participants felt that they had inadequate information on how to use the discussion forums, and a few were not even aware that they existed. The evidence suggests that the students felt that educator involvement had been minimal, with a large proportion of the students dissatisfied with tutor feedback. The results from this study showed that the factor that had the most influence on student use of online discussion forums was instructor facilitation. In particular, ineffective instructor facilitation was associated with a lack of student participation and a poor understanding of how to use the discussion forums. These results have practical implications for planning, designing and facilitating online discussion forums to improve the learning experience for student nurses.

**Keywords:** Online learning; Discussion forum; Facilitation; Facilitation of discussion forums

## **Introduction**

Over recent years, there has been a tremendous growth in the use of technology in teaching and learning. A vast number of online resources, activities and events are now available to students with online learning now being firmly entrenched in contemporary nurse education. The development of online Learning Management Systems (LMS) has seen the introduction and on-

going use of student discussion forums in education. (Garrison & Anderson, 2003) (Berman et al., 2008).

The challenge for educators however, is to manage these forums in a way that promotes learning through facilitation and intervention (Salmon, 2004). Instructors must motivate, challenge, complement and also encourage participants to contribute further to discussions. (Salmon, 2004; Xin & Feenberg, 2006). This role can prove quite challenging and complex particularly when it comes to gauging and monitoring educational activities and the design of the online experience. The aim of facilitation is to encourage quality contributions that are both productive and purposeful, as well as encourage higher order learning and critical thinking (Garrison & Anderson, 2003).

### **Rationale and aim of the study**

The aim of this descriptive study was to explore student nurses' use of online discussion forums in an undergraduate nursing research unit and to provide guidelines for nurse educators to assist them with effective facilitation of online discussion forums.

### **Literature review**

Two key terms were identified in the literature: Online Learning – Learning Management Systems and the facilitation of discussion forums.

### **Online Learning – Learning Management Systems**

One of the most recognised learning systems currently used in tertiary institutions is the LMS, Blackboard (Bradford, Porciello, Balkon, & Backus, 2007). The creators of Blackboard (BASv8) see their vision as providing a secure, easy accessible, user-friendly platform for academics to manage course activity and integrate applications and data for online learning (Bradford et al., 2007; Christopher, Thomas, & Tallent-Runnels, 2004). They also believe that educators can better manage their course materials, communicate with students and evaluate their performance when using Blackboard (Bradford et al., 2007). Blackboard provides an environment that allows users to post information, view documents, upload assignments and take part in asynchronous online discussions. This refers to the leaving of online messages for users to access and read at their convenience. Interaction is delayed, rather than 'real time' as in synchronous discussion.

Users have the convenience and flexibility to post messages at different times without having to be logged into the system at the same time as their peers (O'Neil, Fisher, & Newbold, 2009; Servonsky, Daniels, & Davis, 2005; Young & Paterson, 2007). Within BASv8 educators can set up, monitor, manage and facilitate discussion forums.

One limitation associated with LMS is that staff and students can find it challenging when learning how to use it (Bradford et al., 2007). A study by Pospisil, Aspinall, Matthews and Reid (2007) concluded that there were several issues and problems with using Blackboard for learning which included reluctance of academic staff to change, difficulty with supporting staff with poor information and technology skills and increased student expectations of using computer mediated technology and online learning. Clearly whilst the Blackboard LMS has been a powerful innovation in the world of distance education, there is little evidence to show that facilitators understand how to use it as a learning resource (Bradford et al., 2007; Xin & Feenberg, 2006).

### **Facilitation of discussion forums**

The level of instructor participation is central to discussion forums (Garrison & Anderson, 2003). The encouragement of social presence, connection and students' critical thinking is fundamental to ensure its success (Salmon, 2004). Garrison and Anderson (2003) acknowledge that facilitating is highly influential in promoting participation. Garrison and Cleveland-Innes (2005) and Baker and Woods (2005) agree with this, they believe that active and visible involvement of instructors is crucial in discussions. The instructor's role can be quite challenging when it comes to facilitating online discussions, particularly when it comes to gauging and monitoring educational activities (Garrison & Anderson, 2003). The aim is to encourage quality contributions that are both productive and purposeful, as well as to encourage higher order learning and critical thinking (Garrison & Anderson, 2003). McConnell (2006) suggests that not all learners are enthusiastic about engaging online. Furthermore, Murphy, Mahoney, Chen, Mendoza-Diaz and Yang (2005) argue that some learners lack the skills required to work collaboratively in an environment such as an online discussion forum. Still, teaching staff are often responsible for a number of discussion forums, so tracking student activity and being actively involved in all of them can be difficult (Brace-Govan, 2003). However, students have an expectation that the teacher will take on a leadership role to direct activity in the forums (Paz

Dennen, 2005). Rovai (2007) says that discussions which lack process or are poorly structured result in students becoming confused or losing interest. Garrison and Cleveland-Innes's (2005) support this claim and highlight the need for structure and leadership to establish and maintain deep and meaningful learning. They found that without explicit guidance from the instructor, students primarily communicated through serial monologues rather than messages that exhibited quality critical discourse (Garrison & Cleveland-Innes, 2005).

Wharrad, Cook, and Poussaet (2005) also found that contact and online support with academic staff was infrequent in an online discussion forum in a nursing course. They used focus groups and questionnaires through which they found that tutors lacked confidence and skills in online discussion, there was irregular tutor participation and tutors did not have first-hand experience of using online learning themselves.

Christopher, Thomas and Tallent-Runnels's (2004) evaluation of graduate student thinking levels in online discussions found that when the instructor did not participate in the online discussion lower levels of thinking and discourse were evident in the students. On the other hand, Mazzolini and Maddison (2007) found that student participation rates, perceptions and length of discussion threads (structured online conversation between participants responding to comments or questions in an asynchronous environment) were influenced by the timing, nature and frequency of instructor postings. Surprisingly, these authors found that student postings were more infrequent and discussion threads shorter when the instructor posted more often and played out a more prominent or domineering role. Garrison and Anderson (2003) address this issue emphasising the importance of instructors maintaining a balance of control when facilitating discourse to achieve purposeful goals as well as cognitive development. In contrast, Mazzolini and Maddison (2007) and Xin and Feenberg (2006) suggest that there is a need for instructors not to overdo their role in facilitation and to avoid taking over in the process to prevent stifling student participation. It is the view of these researchers that a balance of the right level of instructor participation is necessary to stimulate discussion and to aid learning, but not so much that it stifles participation (Mazzolini & Maddison, 2007; Xin & Feenberg, 2006).

## Methodology

This study was a descriptive non-experimental design using mixed methods of data collection that included two phases. In Phase one of the research, a descriptive survey consisting of two parts: demographic data (Part A) and closed Likert Scale items, and open-ended questions (Part B) were used to collect both quantitative and qualitative data. The intention was to explore student nurses' use and perceptions of online discussion forums in an undergraduate nursing research unit. Phase two was concerned with the collection and content analysis of students' discussion forum postings. This involved analysing the data for themes relating to forum use including instructor facilitation. Figure 1 show the research methods of data collection and the process of data analyses that the researcher adopted.

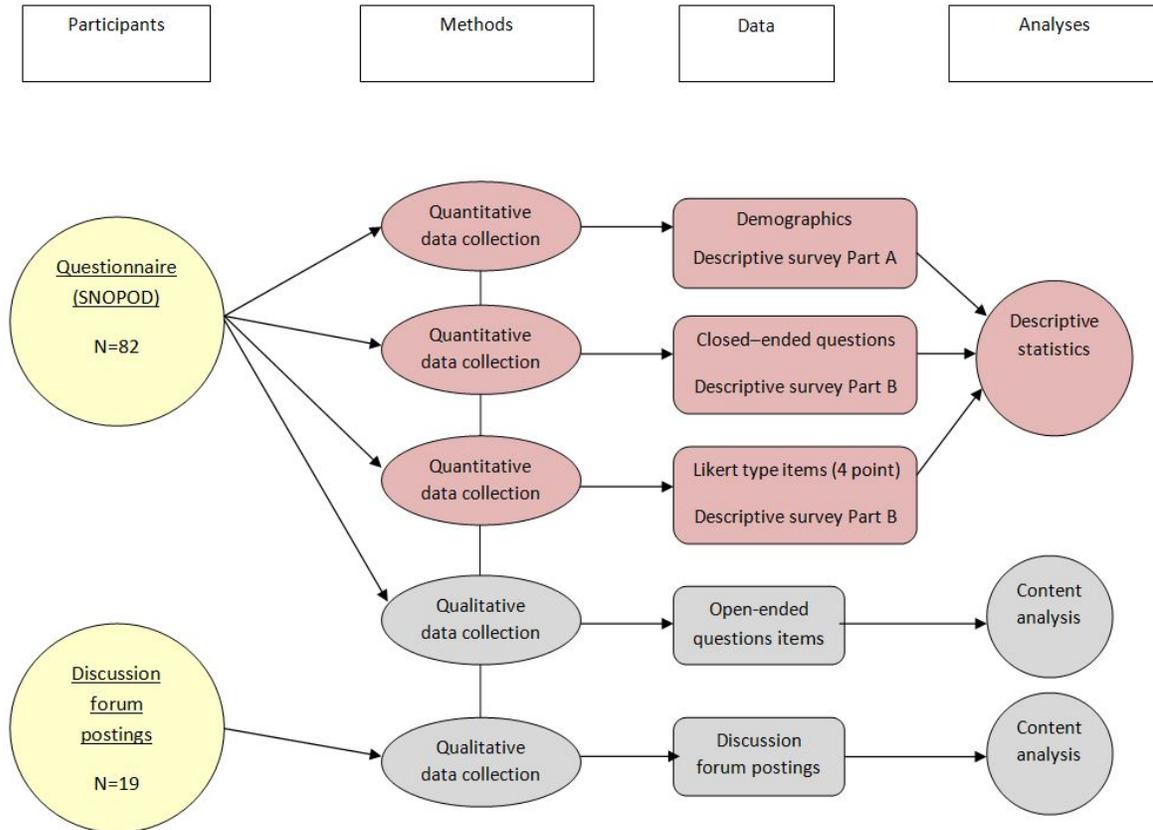


Figure 1 Methods and analysis procedures used in the descriptive study

## **Participants**

The study took place during a single teaching period in 2010 (January – July), targeting a sample consisting of undergraduate student nurses enrolled in the research unit as part of their nursing degree at a School of Nursing in a Western Australia University.

The sample inclusion criteria set by the researcher was that students must be part-time or full-time students enrolled in their final year of their Bachelor of Science (Nursing) undergraduate degree at a Western Australian university.

To obtain participants for this study, the researcher used convenience sampling. In addition, convenience sampling was considered inexpensive and less time consuming than other sampling methods. The sample therefore comprised of sixty off-campus students and one hundred and twenty on-campus students, giving a total of one hundred and eighty students. For the purposes of this study the sample size was deemed appropriate as the researcher believed that it would provide sufficient data to address the broad scope of the research question (Polit & Beck, 2010).

## **Results**

### **Responses**

In February 2010, when the study took place, a total of 337 students were enrolled in the research unit. This comprised of 84 students enrolled in the off-campus mode with a total of 253 students enrolled in the on-campus mode. Following a verbal explanation of the study during the students designated lecture, the questionnaires were distributed to the 172 students who were present. In addition, all of the 84 students undertaking the off-campus mode were mailed a postal questionnaire. Only 69 out of the 172 questionnaires distributed to the on-campus students were returned. A total of 13 out of 84 off-campus students returned the questionnaire. A total of 82 students consented to take part in all parts of the study (the survey and agreement to another educator downloading the consenting students' posts)

### **Instructor facilitation**

The results of the study showed that the participants identified a lack of facilitation and instruction as a major factor in their use of discussion forums. This was evident from both the quantitative and qualitative data with responses indicating that the educator did not encourage or

participate in the online discussions. Participants also felt that they had inadequate information on how to use the discussion forums.

### Quantitative data

The quantitative data obtained from the three Likert scale items in the survey relating to instructor facilitation showed a general trend between each of the items, with the majority of participants agreeing that the level of instructor facilitation had been acceptable. These items included adequacy of instruction (Table 1) on how to use the discussion forums, tutor encouragement and participation (Table 2) and feedback during online discussion (Table 3). Despite this, the results also showed that just under half the students felt they had not been adequately informed about how to use the discussion forums.

Table 1 Adequate instruction was provided on how to use the discussion forums

Item	Likert responses						Mode
	SD N (%)	D N (%)	A N (%)	SA N (%)	NR N (%)	Total N (%)	
	Total D		Total A				
Adequate instruction was provided on how to use the discussion forums	3 (4%)	30 (36%)	39 (47%)	7 (9%)	3 (4%)	82 (100%)	<b>Agree</b>
	33 (40%)		46 (56%)				

Table 2 The tutor encouraged and participated in online discussions

Item	Likert responses						Mode
	SD N (%)	D N (%)	A N (%)	SA N (%)	NR N (%)	Total N (%)	
	Total D		Total A				
The tutor encouraged and participated in online discussions	5 (6%)	24 (29%)	44 (54%)	5 (6%)	4 (5%)	82 (100%)	<b>Agree</b>
	29 (35%)		49 (60%)				

Table 3 The tutor provided adequate feedback during online discussions

Item	Likert responses						
	SD N (%)	D N (%)	A N (%)	SA N (%)	NR N (%)	Total N (%)	Mode
	Total D		Total A				
The tutor provided adequate feedback during online discussions	4 (5%)	24 (29%)	45 (55%)	5 (6%)	4 (5%)	82 (100%)	<b>Agree</b>
	28 (34%)		50 (61%)				

### Qualitative data

The evidence from the analysis of the qualitative data from the open-ended survey questions uncovered lack of instruction by the educator as being one of the main issues highlighted by the students. Students were either not aware that there were discussion forums or did not know how to use them. For example, students stated:

I was never really aware of the forums. It was not really discussed by the lecturer. Perhaps it was mentioned at some stage, but it certainly was never mentioned again.

I did not participate as not many students were using it. The forums need to be more encouraged and students need more exposure.

I find it a disjointed and difficult format to follow. I have yet to work out how to post an entry or response.

I was not really aware of a forum. It was not really discussed by the lecturer. Perhaps it was mentioned at some stage, but it certainly was not mentioned again.

These comments mirror the quantitative findings from the survey where almost half of the participants felt that they had been inadequately informed on how to use the discussion forums.

## **Discussion**

A key finding of this study was that the participants identified a lack of facilitation and instruction as a major factor in their use of discussion forums. Responses indicated that the educator did not encourage or participate in the online discussions. Participants felt that they had inadequate information on how to use the discussion forums, and a few were not even aware that they existed. This suggests that the educator needed to create an awareness of the existence of the discussion forums and to provide instructions to students in order to facilitate use of the discussion forums.

These findings are comparable with research by Rovai (2007), who argued that students will lose interest in online discussions that lack process and structure. This is mirrored by DeWever (2006) who found that meaningful discourse and higher levels of knowledge were achieved when the collaborative process was well structured, scaffolded and adequately supported in online discussions. Garrison and Anderson (2003) further argue that the educator's role in promoting online discussion and participation is highly influential when it comes to facilitating online discussions.

In this study, with regards to instructor participation in the online discussions students commented that instructor involvement was minimal. This finding is consistent with the findings of Wharrad et al (2005) who found that online contact with students and support by academic staff in the discussion forum of a part-time nursing course was infrequent. Possible explanations put forward could be that the educators involved were lacking in confidence and skills and were inexperienced with online learning. This is supported by Salmon (2011) who stresses the need for educators to be aware of best practice and pedagogy in online teaching and learning to provide students with the interactivity in discussion forums. Other studies lend support to the

idea that student perceptions of online discussion are influenced by the nature and frequency of instructor postings. For example, Mazzolini and Maddison (2007) found timing, frequency and nature of instructor postings affected student participation and the quality of postings in online discussion. Similarly, Christopher et al (2004) found dialogue in online discussion was of lower levels of thinking when instructor participation was lacking.

When considering the adequacy of tutor feedback, this study found that a third of the students were dissatisfied. This inadequacy is addressed by Balaji and Chakrabarti (2010), Hew and Cheung (2008), Rovai, (2007), Yeh (2005) and Aragon (2003) who argue that there is a need for students to feel acknowledged and valued for their online discussion contributions and for feedback. They stated that failing to provide feedback will result in students feeling their contributions are unappreciated and undervalued.

## **Recommendations**

The following recommendations, although not exclusive to this study, are suggested to assist educators with the effective facilitation of online discussion forums.

- *Ensure all participants know how to use the discussion forums:* Students need to know how to troubleshoot problems and where to go to for assistance from the educator. Students should also be encouraged to use peers support.
- *Be present and contribute to online discussions:* Educators need to be present in online discussions by intermittently interacting with students and responding to their postings in a timely manner. Ideally, this should be done early on to encourage students to contribute, share opinions and their experiences. There should be a balance between facilitation and direct instruction.
- *Provide regular feedback:* Students need reassurance on how they are progressing in the online discussion activity as suggested by Aragon (2003). Student feedback should be

personalised rather than to the entire class. This will go some way to not only encourage participation, but also to promote social presence within the forums.

- *Motivate and encourage students to actively participate:* This can be done by educators establishing and explaining ground rules at the start of their unit and by encouraging students to actively participate
- *Make discussion engaging:* If students are to remain focused it is important to ensure that online discussion topics are both authentic and relevant to both the unit content and practical aspects of the course. Design discussions that encourage critical and creative thinking, promote social interaction and self-reflection.
- *Staff should develop confidence and skills in using online discussion forums:* It is beneficial for educators to have been online learners themselves so that they have had a good insight into the dynamics of online discussion forums.

In summary this study has explored the role of the facilitator in learning management systems in an undergraduate nursing research unit in relation to the context of a particular university in Western Australia. It is hoped readers from beyond this context will be encouraged to consider the application of this research to their own situations.

## **Conclusions**

Based on the findings from this study it is evident that a lack of facilitation and instruction was seen to be a major factor in discussion forum use, with many students feeling inadequately informed on why to and how to use the discussion forums. The evidence suggests that the students felt that educator involvement had been minimal, with a large proportion of the students dissatisfied with tutor feedback.

The results of this study have practical implications for planning, designing and facilitating online discussion forums to improve the learning experience for student nurses. It is evident that students can see that discussion forums need to have effective instructor facilitation in order to create and sustain online discussions. It should be acknowledged that for educators the challenge of managing online discussion forums is not always easy. However, if students are to benefit

from using online discussion environments it is imperative that instructors learn how to successfully plan, design and facilitate online discussions. This study provides support for advocating change in the way that online discussion forums are facilitated by educators. It is clear that with a better understanding of the factors relating to the use of discussion forums, educators may be better placed to understand how to effectively facilitate online discussions, thus providing a more collaborative learning environment and learning experience for students.

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## **Hawaii International Conference on Education**

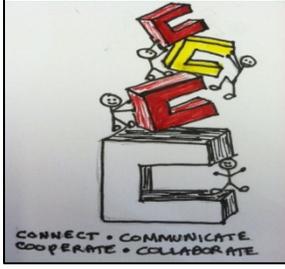
**From Tri-Cultural Conflict to Tri-Cultural Connection: How Successful Urban Science Educators Become Culturally Connected**

### **Abstract**

While the challenge to retain highly competent teachers affects all schools, the crisis is critical in urban high needs districts, which historically suffer from high teacher turnover of qualified educators. This high turnover is especially problematic in the content area of science. Through in-depth phenomenological interviews I document the teaching experiences of veteran urban science teachers and how they navigated pathways to successful teaching careers in high needs districts. Results focus on how the cultural levels of teacher socialization (personal, institutional, and societal) shaped their induction into the teaching profession. In addition, the analysis of the data suggests that teacher preparation programs need to be reconceptualized to include a specific focus on culturally relevant and responsive pedagogy, teacher identity development, and how to develop community networks and connections. This restructuring is key for novice urban teachers to either increase their cultural sensitivity, or align their own cultural belief systems in-order to develop the necessary skill set to become successful science teachers in urban high needs districts.

## Abstract

The purpose of this project is to provide compelling information, along with effective strategies in order to be able to connect, communicate, cooperate, and collaborate to better understand the role physical activity plays in education. We know that being physically active is important in combating hypokinetic diseases and certain types of cancer (United States Department of Health and Human Services USDHHS, 1996-present). We can now add to the long list of benefits of physical activity; increased cognition, focus, and overall readiness to learn. According to Ratey, (2008) exercise is like “Miracle Grow” for the brain (AAHPERD, Keynote address, San Diego, 2011). Researchers suggest that what we now call thinking is really evolutionary, internalization of movement and that play helps shape the brain, opens imagination and invigorates the spirit (Blaydes, 2000; Jensen, 2000; Lengel & Kuczala, 2010). This information is really not new, it is old news that is being revisited by leaders in the field of education and neuroscience, and rightfully so. We are finally coming together to shed new light on an age old story (Groppel, AAHPERD, San Diego, 2011)! It is the intent of these authors to help all educators understand and be able to feel comfortable using the powerful tool of movement to enhance students’ physical, emotional, spiritual, and cognitive fitness.



**Connect, Communicate, Cooperate, & Collaborate**

2013-2014

This document is intended to gather information on your school’s best practices in regards to being considered a “physically active school system.” It will be compiled and used as research for our book, P.A.S.S: A Guide to Creating Physically Active School Systems. Your participation is completely voluntary and very much appreciated. If you would be so kind as to share this information with Carol Ciotto or myself you can e-mail either one of us at [Ciottocaj@mail.ccsu.edu](mailto:Ciottocaj@mail.ccsu.edu) or [Fedem1@southernct.edu](mailto:Fedem1@southernct.edu). Thank you again for your time and effort on this project.

Sincerely,

Marybeth H. Fede (SCSU) & Carol Ciotto (CCSU)

School: \_\_\_\_\_ Town: \_\_\_\_\_

Grade Level: \_\_\_\_\_

Please respond to the following 3 questions:

1. How do you actively connect your curriculum with the Physical Education Program in your school? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. How do you collaborate/cooperate in order to bring physical activity into the classroom(s)? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. How do you communicate/advocate for Physically Active Learning with parents and/or in the community in general?  
\_\_\_\_\_  
\_\_\_\_\_



**Connect, Communicate, Cooperate, & Collaborate**

2013-2014(PE)

This document is intended to gather information on your school’s best practices in regards to being considered a “physically active school system.” It will be compiled and used as research for our book, P.A.S.S: A Guide to Creating Physically Active School Systems. Your participation is completely voluntary and very much appreciated. If you would be so kind as to share this information with Carol Ciotto or myself you can e-mail either one of us at [Ciottocaj@mail.ccsu.edu](mailto:Ciottocaj@mail.ccsu.edu) or [Fedem1@southernct.edu](mailto:Fedem1@southernct.edu). Thank you again for your time and effort on this project.

Sincerely,

Marybeth H. Fede (SCSU) & Carol Ciotto (CCSU)

School: \_\_\_\_\_ Town: \_\_\_\_\_

Grade Level: \_\_\_\_\_

Please respond to the following 3 questions:

1. How do you actively connect the classroom curriculum with your PE program?

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2. How do you collaborate with the classroom teacher to bring physical activity into the classroom(s)? \_\_\_\_\_

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3. How do you communicate to advocate for Physically Active Learning/PE program with parents, and/or in the community in general? \_\_\_\_\_

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## Future Recommendations:

The mission of education needs to include the whole child and their basic right to move! How do we get people to value and become advocates for a physically active lifestyle? Groppe, (2011) suggests that people need the right tools in order to complete the mission. Americans have a million excuses not to be physically active, with the number one reason being not enough time. Other barriers to full engagement include but are not limited to technology, multi-tasking, denial, self deception and it's easier not to! Educators need to understand the barriers and that it is not the stress that is bad, but rather the lack of recovery time that we don't allow ourselves or our students. We need to get students fully engaged. Stress is not the enemy, it is how we grow, get stronger, and produce energy. It is only when we fail to manage the recovery period properly that problems arise (Groppe, 2011). In this day and age of smart phones, I-pads, and information at our fingertips, we are so busy multi-tasking and trying to handle multiple stimuli; that we never really fully disengage. This is what is hazardous to our health and well-being. Making excuses and telling ourselves the wrong story may give us meaning and significance, but it prevents real change, becoming fully engaged and disengaged.

The best tool to implement change is our ability to CONNECT, COMMUNICATE, COOPERATE & COLLABORATE! You can make a difference one student at a time by understanding the barriers to full engagement. Including Gardner's (1999) eight multiple intelligences, and Glasser's (1998) five basic human needs in your teaching is a great way to reach all the very different individuals that make up your classes. Furthermore, Lengel & Kuczala's (2010) framework for movement in the classroom, Blayde's, (2000) action based learning, Katz's (2010) ABC's for fitness, brain breaks in the classroom, Gilbert's (2000), brain dance, the powerful connection between brain and body that Ratey (2008) makes, and before and after school programs which lead to community involvement, are all available tools that can help achieve the mission. We need to arm ourselves with these tools, reframe the story, collect data, communicate the findings, cooperate & collaborate with faculty and staff, administrators, board of education members, parents and most importantly our students; one at a time in order to educate the WHOLE child.

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# P.A.S.S.



## *Creating Physically Active School Systems*

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### ***WHAT IS P.A.S.S.?***

#### **Physically Active School Systems**

- Embedding physical activity throughout the school day/system to enable all students to improve or maintain their physical fitness and their overall health and wellness, while enhancing their learning opportunities.
- Incorporates activities before school, during school, after school, at home and in the community.

### ***WHAT ARE THE BENEFITS OF P.A.S.S.?***

#### **Psychological & Physiological**

- |                               |                    |
|-------------------------------|--------------------|
| ● ++ Psychological well-being | – Blood Pressure   |
| ● -- Anxiety and depression   | ++ Skeletal health |
| ● ++ Self-esteem              | ++ Cognition Focus |
| ● – Overweight and obesity    | - Absenteeism      |
| ● + HDL cholesterol           | - Behavior issues  |



# P.A.S.S



## *Creating Physically Active School Systems*

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### ***HOW DO I GET STARTED?***

#### **Steps for implementation**

- Make a Commitment to become a Physically Active School System
- Collaborate with the stakeholders (administration, faculty/staff, students and community)
- Develop an action plan
- Develop motivational techniques to engage stakeholders
- Promote physical activity initiative/P.A.S.S. Kick-off: This will signify the start of the implementation phase

**Needs Assessment Plan**

**Opportunities for Implementation**

**What physical activities are you doing now?**

**If collaborating, with whom?**

**What would you like to add in the future?**

*Before/After School*

*During School*

*Recess/Lunch*

*Physical Education*

*Family/Home*

*School/Community Events*

**For each opportunity for implementation, identify in the box provided what if any physical activity you are currently doing, who you might be working with and what you might want to consider incorporating in the future.**

Action Plan		
Opportunities for Implementation	What physical activities are you doing now?	If collaborating, with whom? What would you like to add in the future?
Before/After School		
<i>During School</i>		
<i>Recess/Lunch</i>		
<i>Physical Education</i>		
<i>Family/Home</i>		
<i>School/Community Events</i>		

**For each opportunity for implementation, identify in the box provided what if any physical activity you are currently doing, who you might be working with and what you might want to consider incorporating in the future.**

## Resources for Classroom Teachers

**Lesson Ideas Active Academics** provides practical ideas for integrating physical activity in K-5 math, reading/language arts, health/nutrition, and physical education classes.

[www.activeacademics.org](http://www.activeacademics.org)

**Take 10** offers a searchable database of classroom-based physical activity lessons for K-5.

[www.take10.net/whatistake10.asp?page=new](http://www.take10.net/whatistake10.asp?page=new)

**Activity Bursts for the Classroom** shows elementary schools how to restructure physical activity into multiple, brief episodes throughout the day without taking away valuable time for classroom instruction.

[www.davidkatzmd.com/abcforfitness.aspx](http://www.davidkatzmd.com/abcforfitness.aspx)

**Brain Breaks** provides physical activity lessons for K-6 classrooms. Lesson menu is broken into specific content areas and other settings.

[www.emc.cmich.edu/brainbreaks/](http://www.emc.cmich.edu/brainbreaks/)

**Energizers** are classroom based physical activities for grades K-8 that integrate physical activity with academic concepts.

[www.ncpe4me.com/energizers.html](http://www.ncpe4me.com/energizers.html)

**Winter Kids Outdoor Learning Curriculum** is aligned with National Education Standards and offers interdisciplinary lessons in a variety of subjects for grades K-12 with a complete adapted component for disabled children.

[www.winterkids.org](http://www.winterkids.org)

**Action Based Learning** - puts brain-based learning into action with teacher friendly, "kid-tested, kid-approved" strategies that move students to learn! See the "articles" tab.

<http://www.actionbasedlearning.com/>

**Brain Rules** - is a multimedia resource detailing 12 key rules scientists know about how the brain works. For each brain rule Dr. John Medina presents the science and then offers ideas for investigating how the rule might apply to our daily lives, especially at work and school.

<http://www.brainrules.net>

**"Spark, the Revolutionary New Science of Exercise and the Brain"** by Dr. John Ratey  
This book presents groundbreaking research linking the connection between exercise and the brain's performance. Evidence shows how even moderate exercise will supercharge mental circuits to beat stress, sharpen thinking, enhances memory, and much more. Chapter two is dedication to physical activity and education.

<http://www.johnratey.com>

**Organizations Supporting Youth Physical Activity and Wellness**  
**National Association for Sport and Physical Education**

[www.aahperd.org/naspe/](http://www.aahperd.org/naspe/)

**CDC's Division of Adolescent and School Health**

[www.cdc.gov/healthyyouth/index.htm](http://www.cdc.gov/healthyyouth/index.htm)

**Alliance for a Healthier Generation**

[www.healthiergeneration.org/](http://www.healthiergeneration.org/)

**Action for Healthy Kids**

[www.actionforhealthykids.org/](http://www.actionforhealthykids.org/)

**Resources for P.A.S.S. During the School Day**

Implementing Classroom-Based Physical Activity

Instant Recess Lift Off!- activity videos.

Just-A-Minute (JAM) School Program-fitness break activities, including monthly newsletter.

Maximizing Opportunities for Physical Activity during the School Day

Mississippi's Health in Action Program

Mississippi's You've Gotta Move Program

Moving More Challenge - fitness challenge program available to schools to encourage physical activity before/during/after school.

NASPE's Teacher Toolbox

North Carolina Energizers - download "booklets" of energizer activities for elementary and middle school classrooms.

nrgBalance

nrgOutdoors

nrg Powered by Choice-for teens and leaders.

PE Central

Physical Activity Used as Punishment and/or Behavior Management (2009)

Ready, Set, Fit –health and activity program for classroom teachers in grades 3 and 4.

Take 10!® - Ties learning objectives to physical movement.

U.F.A. Brain Breaks- brain break activities.

Ultimate Camp Resource

Yoga Recess in Schools-DVD and free training

10 Simple Activities to Encourage Physical Activity in the Classroom

ABC for Fitness

Accelerated Learning Brain Breaks - unusual brain break games.

Active Academics - activities integrate physical activity into lessons, by grade and subject.

Activity Ideas for All Seasons

Behavior Matters Brain Breaks - brain break activities.

Brain Breaks- elementary level, organized by academic subject matter.

California Project Lean-Jump Start Teens

CDC Health and Academics

Choosy Kids – Resources for nutrition and physical activity.

Circus Fit

Comprehensive School Physical Activity Programs (2008)

Dr. Jean Brain Breaks - list of activities for younger children (pre-school and K).

Dr. Jean Songs and Activities for Young Children

Energizers: Classroom Based Activities –printable activity cards.

Fit Kids Activities - physical activities that integrate academics.

Fitness Fun Forever

Game On! The Ultimate Wellness Challenge

Get Up and Go!

## **Resources for P.A.S.S. Before and After School**

A Primer on Joint Use

A Running Start-video resource for coaching youth runners

Afterschool.gov

Afterschool Counts!

After School Physical Activity Website

BAM: Body and Mind

Considerations for Developing Effective Afterschool Programs

California's After School Physical Activity Guidelines

Carolina Panthers Fit Squad Activity Videos

Co-Curricular Physical Activity and Sport Programs for Middle School Students (2002)

Fit for Life After-School Program – activity leader handouts and nutrition mini-lessons.

Games Kids Play

The Healthy Kids, Healthy New York After-School Initiative Toolkit

Joint Use

Kidnetic

## **Walking and Biking to School**

Bike for All

CDC Walk to School Program

Creating a Walk to School Program

International Walk to School Program

Safe Routes to School

Walking School



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Integrating Adjunct Faculty in Student Learning Outcomes and Standards of Performance
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#### Abstract

Presenters will share their analysis of the integration of part-time faculty in teaching and learning initiatives in the School of Education at Brandman University Chapman University System. Decide whether the strategies are currently transferable to your institution. You will leave with the knowledge to make recommendations to your faculty. Enlist your faculty in developing plans to integrate adjunct faculty through course mentorship, membership in campus advisory boards, school program reviews, use of virtual meetings, and assignment rubric calibrations.

**12<sup>th</sup> Annual Hawaii International Conference on Education**  
**Abstract**

**Title: Muslims – as Scientists & Mathematicians, not Terrorists!**

Islam is one of the fastest growing religions of the world with about a billion adherents - a fifth of the world's population. Approximately 8 million Muslims reside in the United States (Lorraine Ali, 2008). Historical records reveal that Muslims (the followers of Islam) have been in this country since the time of Columbus as many of the slaves brought to this country from Africa were of Islamic faith (Gomez, 1994).

Currently Islam has become a highly misunderstood religion in the United States (Meacham, 2009; Ayers & Reid, 2005) with many of us having negative perceptions about Islam and Muslims (Gollnick & Chinn, 2013). Such misunderstandings about Islam have not been based entirely on reports about the unfortunate events of September 11, 2001, or the wars of Afghanistan and Iraq, the Texas Fort Hood shootings, or Boston bombing. Much of the negative perceptions have stemmed from the misinformation and stereotypic portrayal of Islam by the popular media, as well as by some religious/political leaders (Meacham, 2009).

For many educators addressing issues pertaining to any religion may become a challenge. For example, an educator might find himself incorporating his own viewpoints when discussing a religion. Educators also have to be cognizant of the First Amendment issue pertaining to the separation of religion and state. The First Amendment does not however, prohibit teaching about religion as long as it is not in the form of indoctrination. Taking all these factors into account may become somewhat of a balancing act for

educators. There are however, some informative and non-bias ways that can be utilized to initiate the concept of Islam in a classroom.

The intent of this presentation is to provide teachers and educators with some information, strategies, and resources for teaching about Islam and Muslims. It is the hope of this presenter that by using these tools educators will be able to eradicate the prevailing stereotypes and replace them with true appreciation and understanding about Islam and its believers.

### **References:**

- Ali, L. (2008, April 16). Hope—and Skepticism: American Muslims wait to see if the Pope will reach out to them. *Newsweek*.
- Ayers, S. J. & Reid, S. (2005). Teaching about religion in elementary school: The experience of one Texas district. *The Social Studies*, 96(1), 14-17.
- Gollnick, D. M. & Chinn, P. C. (2013). *Multicultural education in a pluralistic society*. Columbus, OH: Pearson Education Ltd.
- Gomez, M.A. (1994). Muslims in early America. *The Journal of Southern History*, 60(4), 671-710.
- Meacham, J. (2009). Effective teaching to counter misinformation and negative stereotypes: The example of Islam. *Peer Review*, 11(2), 13-16.

**12<sup>th</sup> Annual Hawaii International Conference on Education**  
**Abstract**

**Title: Immigration: How should we teach beyond Elise Island?**

Immigration is an important topic in the curriculum from elementary to the college level. Since US is a nation of immigrants, there is no dispute that immigration is an integral part of US history. In recent years this topic has become part of national discussions that extend far beyond the classroom. The ramification of such discussions/debates has impacted students in the classroom at all levels. The recent passing of immigration laws in various States put this topic at the fore front of the national dialogues. However, these dialogues generated many misconceptions about immigration and put educators across the country in a dilemma of how to address this without stirring up controversy. It is also important to note that many educators in the classroom may not be familiar with the core immigration issues or its processes and may have some of the same misconceptions like that of their students.

Many educators teach “immigration” from the Ellis Island perspectives. Most of these units usually have some common elements: where are our forefathers came from; asking children in the classroom to interview their grandparents to find authentic information about the place of origin where their grandparents or greate grandparents came from; watching a vedio on Ellis Island; taking a virtual tour of Ellis Island called “An Interactive Tour of Ellis Island: An Immigration Activity” published by Scholastic; and role playing the experiences the students’ grandparents or greate grandparents had at the Ellis Island. The units also includes books about Ellis Island and life of immigrants

here in the United States. If one observes these educators teaching immigration through Ellis Island perspective, one can easily get the impression that “immigration” happened only in the past and treated it as a historical event. However, immigration still happens and will continue for many years to come. Today’s immigration process is far more complex than the time of Ellis Island period. Therefore, this topic must be addressed not only from historical perspective but also through current perspective.

The intent of this presentation is to provide educators with some information, strategies, and resources for teaching about immigration. It is the hope of this presenter that the educators will be able to use these tools to address immigration in a positive and informative way in their respective classrooms.

## Conference Proceedings

1. Title: Contributing Factors to an Aboriginal Student's Successful Teacher Candidate Internship
2. Margaret Leslie Martin
3. PhD Candidate in Educational Administration, Department of Educational Administration, College of Education, University of Saskatchewan, Saskatoon, SK
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### **ABSTRACT**

To increase the educational success of Aboriginal students and work towards a just society, it is essential for more Aboriginal teachers to enter into school systems. My research aim is to discover factors that may assist Aboriginal teacher candidates to have a successful internship that inevitably may guide them into a teaching career. Kanu's (2007) research has determined that the integration of Aboriginal cultural knowledge and perspectives in student learning outcomes, instructional methods and resources, and as part of the philosophical underpinning of the curriculum results in positive outcomes. An increase of Aboriginal teachers within the school systems will infuse cultural knowledge, worldviews and an understanding that will assist in learning for all.

In the discovery of success factors, part of my research explores the areas of social and political justice. These areas may be uncovered by examining a school's or classroom's prevailing worldview. Hermes (2005) wrote that 'more powerful than (teacher's) knowledge of cultural differences is their knowledge of the big picture – the context of socioeconomic and

cultural oppression of Native Americans'. The participant's and participating school's knowledge of Aboriginal socioeconomic and cultural oppression will be investigated to reveal any influencing elements within a classroom structure. Examining these areas may uncover a 'habitus of education' within a school that inevitably affects the teacher candidates (Shields, 2004). Understanding this larger picture and the elements that create the prevailing worldview and the effects that they have on the teacher candidate's experience will be part of the research study.

Title of Proposal: **Multiplicative Thinking: Making “Copies of” Proficient Practitioners and Persistent Pupils**

Type of Session: **full 90-minute workshop**

Description of workshop:

**Proportional reasoning is a key mathematical idea in middle school mathematics. It is displayed when a student multiplicatively attends to quantities and operations.**

**Multiplicative thinking, however, is not natural for students. We have found that a “copies of” model can help develop this multiplicative understanding. In this workshop, participants will experience professional development activities that enhance instructional techniques to address the lack of students’ ability to make sense of proportional reasoning.**

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## **Multiplicative Thinking: Making “Copies of” Proficient Practitioners and Persistent Pupils**

Proportional reasoning is a key mathematical idea in middle school mathematics (National Governors Association, 2010). It is the cornerstone of the elementary mathematics curriculum and the capstone of the high school mathematics curriculum (Post, Behr, and Lesh 1988).

Proportional reasoning is not necessarily observed when a student sets up a proportion; cross multiplies, and produces an answer. Rather, proportional reasoning is observed when a student recognizes a multiplicative relationship between quantities and is able to reason multiplicatively to solve a problem. Students’ development of multiplicative reasoning is difficult and slow (Clark & Kamii, 1996). We believe this is in large part due to a general lack of curricular focus on supporting students’ ability to make sense of big mathematical ideas through powerful ways of thinking. Sadly, students typically learn to *do* procedures but they lack conceptual understandings for those procedures and they lack an understanding of why the procedures are important to learn (Schoenfeld, 1994). In this article, we discuss activities and structures from our own professional development projects that we utilized to help teachers develop new ways of thinking about proportionality.

### **Focus on Student Thinking and Problem Solving**

We believe teachers must shift their focus and curiosity to provide opportunities for students to develop powerful ways of thinking in order to help them to solve problems and to determine how to attack a problem that they have not seen before. We have found the professional development activities described in this article support teachers ability to attend to students’ thinking by providing teachers the opportunity to reflect on their own students’ misconceptions and poorly formed conceptions. The philosophy guiding the professional development activities used by the author team is also predicated on the belief that student achievement can be improved by improving teachers’ mathematical content knowledge and re-centering teachers’ focus on student

thinking and problem solving. More specifically, if the participating teachers develop ways of thinking about mathematics, develop a profound understanding of the fundamental mathematics that they teach, and develop strategies for effective problem solving, then these same mathematical practices will begin to develop in the students that they teach. Our experiences have led us to believe that teachers with such a grasp of these mathematical practices and habits of thinking believe strongly that their students must also develop the same mathematical practices and habits of thinking.

### **Problem-Solving Schema**

As is clearly evident in the Common Core Standards for Mathematical Practice (National Governors Association, 2010), training students to solve challenging and unique problems is an important emphasis now being placed upon American mathematics students and teachers. In the professional development model we are implementing, middle school mathematics teachers are trained to provide opportunities for students to develop the type of problem-solving that requires accessing various “tools” and heuristics. Instructional techniques, such as paired-board work (Vicich, 2007), that support students’ development of deep, well-connected conceptual understandings in a student centered-classroom are modeled by facilitators in our workshops. Teachers come to learn that in their classrooms the mathematics itself is to be the final authority to the “correctness” of proposed solutions and not simply the teacher stating such. Productive problem-solving behaviors are developed using appropriate content. Specific development of problem-solving is focused on:

- Initial Engagement (underlining the givens and goal(s));
- Planning & Conjecturing;
- Strategy Selection;
- Monitoring of Progress (metacognitive reflection);
- Verification;

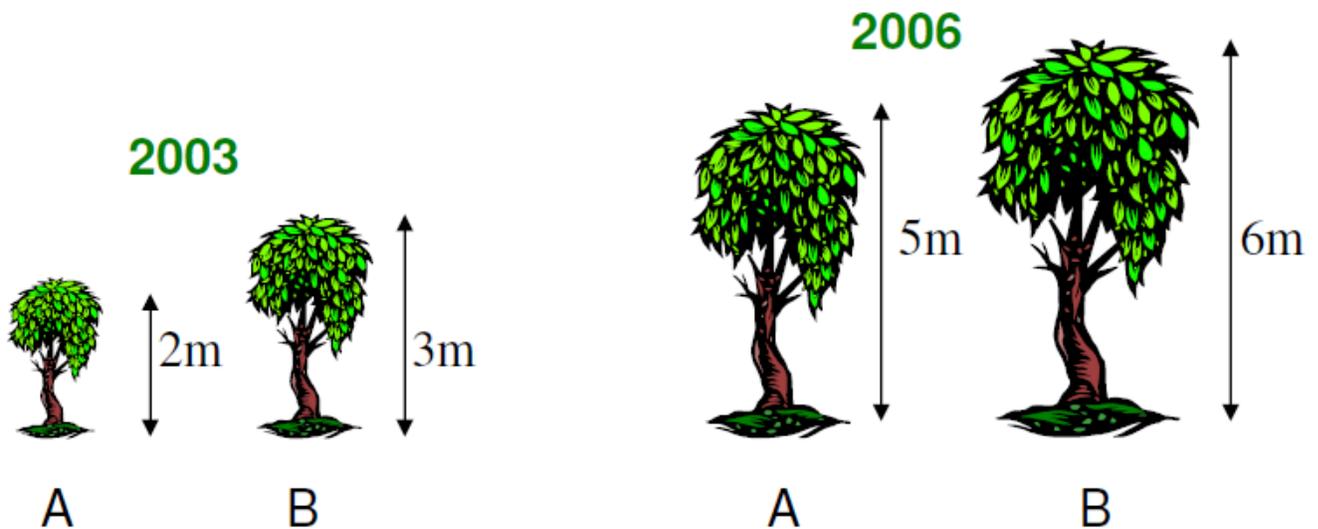
- Productive Belief System.
- Creating Productive Classroom Discourse

The Diagnostic Instrument (see appendix 1) is used by teachers to analyze the problem-solving behavior of others. Repeated practice with implementing problem solving strategies develops skills to help students with their problem-solving abilities but also increases teachers' awareness of their own problem-solving behaviors.

### Learning Activities

As an example of the kinds of activities that are implemented in the professional development workshops with the goal of developing the mathematical practices, habits of thinking, and problem-solving strategies listed above, consider the situation shown in Figure 1 (Lamon, 2005).

**Figure 1: The Tree Problem**



Which tree grew more, Tree A or Tree B?

Without any prior discussion or instruction, participants typically share that neither tree grew more since each tree grew an additional 3 meters from 2003 to 2006. However, a minority of participants will indicate that Tree A grew more since its height in 2006 is 2.5 times its height in 2003 while Tree B's height in 2006 is only 2 times its height in 2003.

This example opens up a powerful way of thinking called *multiplicative reasoning* (Confrey, 1994; Kieren, 1994; Sowder et al., 1998; Vergnaud, 1994) that most teachers have not explicitly or consciously been aware of in their own ways of thinking. Also, the Tree Problem provides a clear example of how multiplicative reasoning can be contrasted with *additive reasoning*. Initially, most workshop participants recognize that each tree grew by an additional 3 meters. Often, this is all they see. Their initial thinking reveals their impoverished ability to reason mathematically since one can also compare the heights of the trees multiplicatively.

Multiplicative reasoning is the capstone of the elementary school curriculum and the cornerstone of high school mathematics and science (Lesh, Post, & Behr, 1988). Consider the following courses where multiplicative thinking plays a foundational role:

- Algebra – e.g. constant rate of change (slope), linear functions, exponential functions
- Geometry – e.g. measurement, scaling, similarity
- Probability and Statistics
- Trigonometry – e.g. trigonometric ratios
- Calculus – e.g. instantaneous rate of change and average rate of change
- Differential Equations – e.g. autonomous differential equations

Because multiplicative reasoning is ubiquitous in all mathematics and science courses and is a critical aspect of making sense of foundational ideas, our professional development efforts focus

on developing multiplicative reasoning. We then leverage this development in order to build other important mathematical ideas.

Returning to the example with the growing trees, it is important for teachers and students to be aware of their thinking. In a given situation at a given time, are the students thinking additively or multiplicatively? Is it appropriate to do one or the other? Can both be legitimate ways of thinking? How might we describe the situation both additively and multiplicatively? Sometimes, workshop participants are bothered that this problem does not have a “correct” answer. They are eager to answer the question “which tree grew more?” with a specific response. In this case, depending on whether one is reasoning additively (the trees both grew by an additional 3 meters) or multiplicatively (Tree A grew by 2.5 times as much while Tree B grew by 2 times as much), the question does not have a single “correct” answer. Rather, the question is designed to make one aware of divergent ways of thinking and encourages the ability to be aware of one’s thinking.

This is not the end of the work that can be done with the simple example of the growing trees. What makes the situation so powerful is that workshop participants can be pushed further to express the relationships between the histories of the heights of the trees. During the activity, when the workshop facilitator feels that the group is ready to move on, participants are encouraged to express the relationship between the old height and the new height of each tree in a multiplicative way. With some prodding and encouragement, participants eventually agree with the following statements:

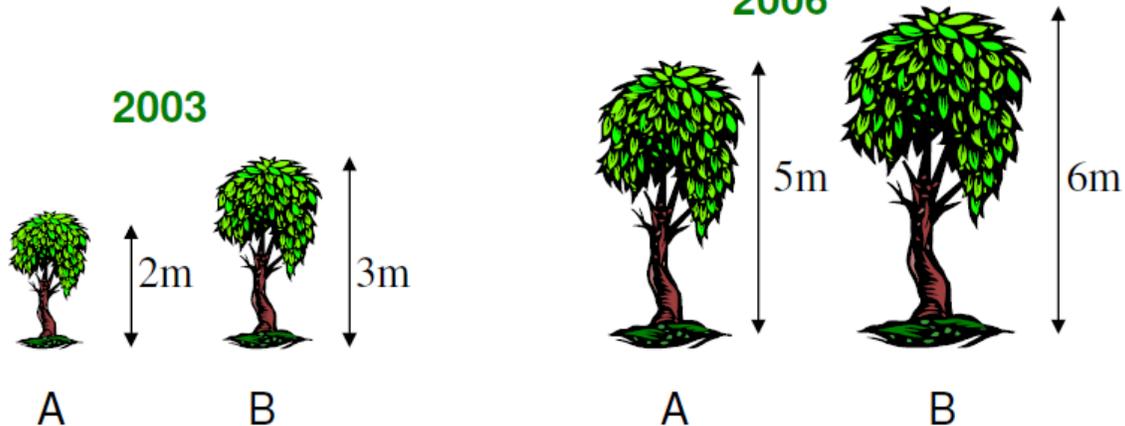
- The height of Tree A in 2006 is 2.5 times its height in 2003
- The height of Tree A in 2003 is  $\frac{2}{5}$  times its height in 2006
- The height of Tree B in 2006 is 2 times its height in 2003

- The height of Tree B in 2003 is  $\frac{1}{2}$  times its height in 2006

It is important for teachers and students to be flexible in how they compare the heights of the trees. While the fact that the height of Tree A in 2006 is 2.5 times its height in 2003 is relatively easily seen. However, the fact that the height of Tree A in 2003 is  $\frac{2}{5}$  times its height in 2006 comes as much more of a challenge for the workshop participants. To help with this understanding, participants are encouraged to imagine that Tree A in 2006 is segmented into 5 equal parts (with respect to height). Each part has a height measurement of 1 meter (since the entire tree is 5 meters in height) and therefore, each part is  $\frac{1}{5}$  times the height of the entire tree. It takes 2 *copies* of the  $\frac{1}{5}$  (1 meter) parts of the tree to have an equivalent height of the 2003 tree. Participants begin to see fractions using a “partitioning” and “iterating” model (Steffe & Olive, 2010; P. W. Thompson & Saldanha, 2003). That is, the entire tree height is partitioned (cut) into 5 equal lengths. We need to iterate (copy) this length twice in order to create the height of the tree in 2003. That is, we have 2 copies of  $\frac{1}{5}$ , we have 2-one-fifths, we have  $\frac{2}{5}$ . To see the fraction  $\frac{2}{5}$  as two copies of  $\frac{1}{5}$  is to view the fraction in a multiplicative way and is very helpful when learning to add, subtract, multiply, and divide fractions. As Thompson and Saldanha (2003) state, “When students understand the numerical equivalence of measuring and partitioning they understand that any measure of a quantity induces a partition of it and that any partition of a quantity induces a measure of it” (p. 30). Our goal is to push the boundaries of teachers’ thinking so that they build a flexible conception of partitioning and measuring as a multiplicative activity.

To further practice and develop the ways of reasoning multiplicatively addressed so far, the following extension question (Figure 2) is given.

**Figure 2: The Tree Problem...Revisited**  
**2006**



Focus on the 2006 situation. How much taller is Tree B than Tree A?

To answer this question, one can reason that Tree B is 1 meter taller than Tree A (additive reasoning). Or, one can reason that Tree B is  $\frac{6}{5}$  times as tall as Tree A. When encouraged to examine their thinking and to articulate how it makes sense that “Tree B is  $\frac{6}{5}$  times as tall as Tree A,” participants often (with confidence) fall back on the partitioning and iterating model for thinking about fractions. That is, if Tree A is cut up into 5 equal parts, each part representing  $\frac{1}{5}$  the height of Tree A, 6 copies of  $\frac{1}{5}$  or  $\frac{6}{5}$  of Tree A are needed to create a height that is equivalent to the height of Tree B.

This is just one activity that is used in the workshops to accomplish several goals related to our philosophy of professional development.

- The problem is a simply worded and understood situation that can engage all participants and opens up an opportunity to examine the way in which we think.
- The problem allows for both additive and multiplicative reasoning. This allows the opportunity for us to be aware of the different ways of reasoning and to be cognizant of which way we are reasoning while grappling with the problem.
- The problem allows for connections to previous ideas, namely the idea of fraction.

- The problem sets the stage for other activities designed to further develop teachers' ability to think multiplicatively that allows them to make sense of other mathematical ideas.

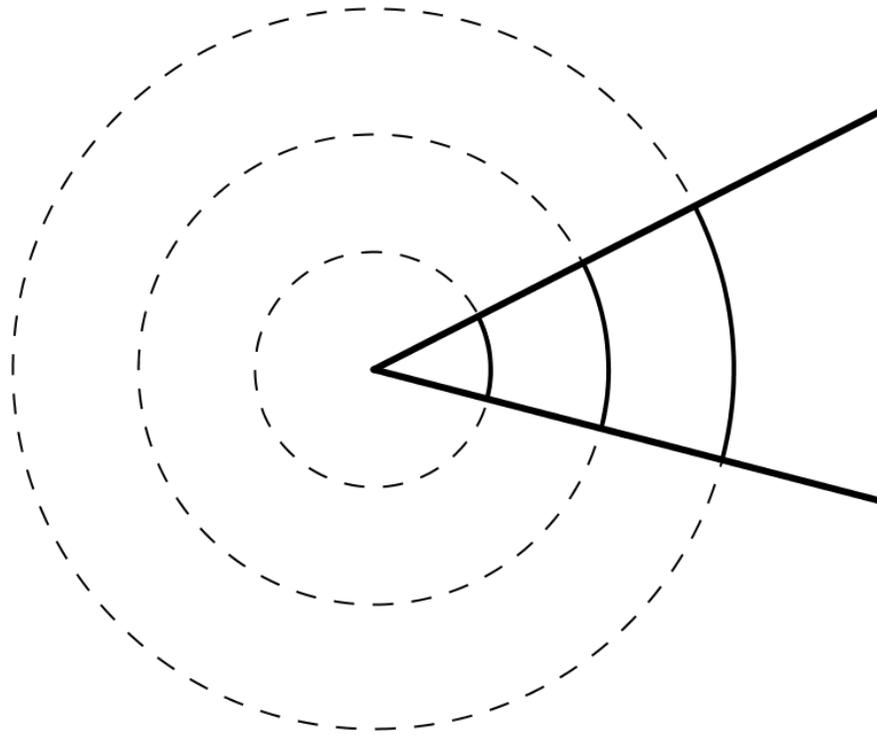
Imagine that multiplicative reasoning is now a well-developed norm for the teachers.

Assuming this, we now consider how multiplicative reasoning is used as a foundational way of thinking for the purpose of developing other mathematical ideas.

Reasoning multiplicatively about “copies of” or “times as large as” also leads to powerful thinking about measurement (P. W. Thompson & Saldanha, 2003). Teachers typically believe they understand the concept of measurement and how to measure using non-standard units. They know, for instance, that they can use paperclips to measure length. But do they really understand the mathematics of this idea? To check, we ask them to measure an angle using something other than degrees. We even give them freedom to select a manipulative object. At this point the teachers must focus on the *attribute* they are measuring. And this is no small task. They must agree on that attribute, find another object with the same attribute, and compare the two multiplicatively. That is, they must be able to say that this object is  $x$  times as large as (or  $x$  copies of) this other object. The teachers are challenged but they see the need to solve the problem.

Eventually some teachers will realize that there is a built-in unit of measure. Someone will notice that no matter the size of a circle centered at the vertex, the portion of the circle subtended by the angle is the same fraction of the whole circle. Additionally, that portion of the circumference is some “copies of” or is some “times as large as” the radius of the circle *regardless of the size of the circle* (Moore, 2010; P.W. Thompson, 2008). The teachers then uncover a useful tool for measuring angles that is built into every circle: the radius (Figure 3).

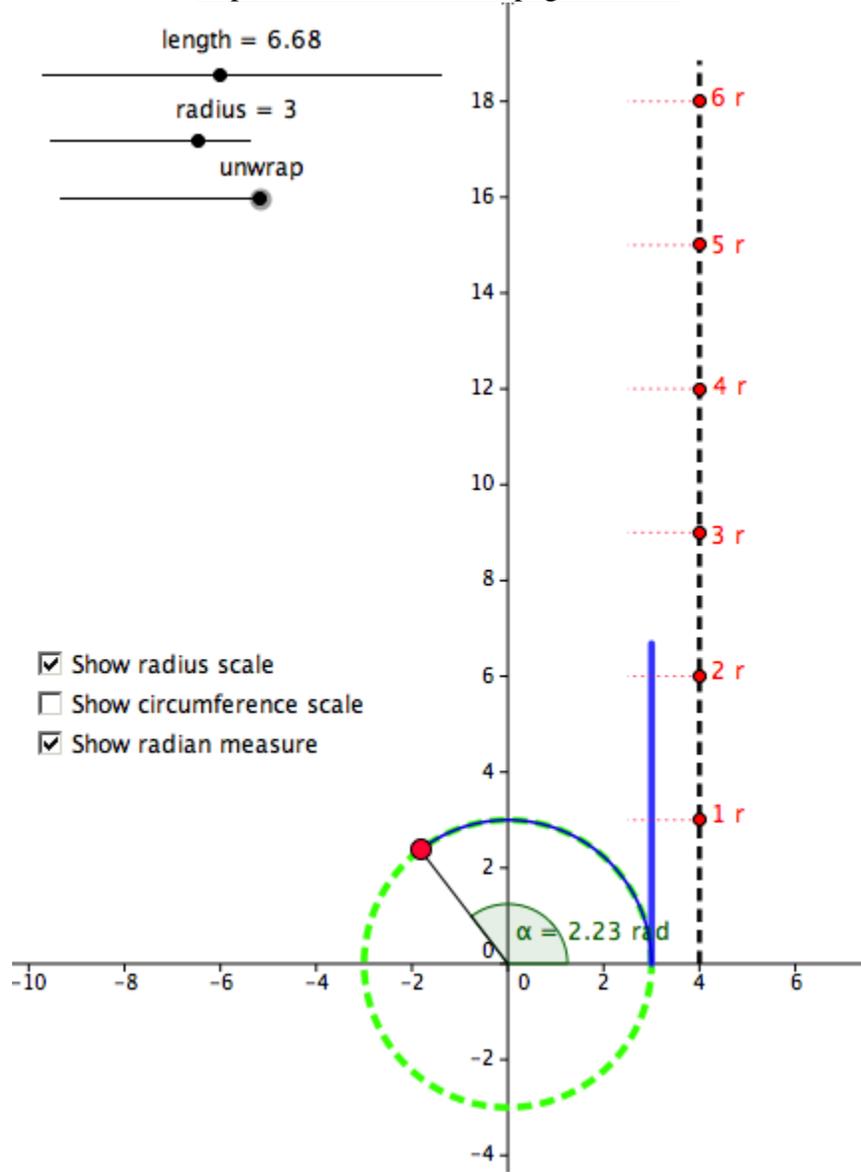
**Figure 3**

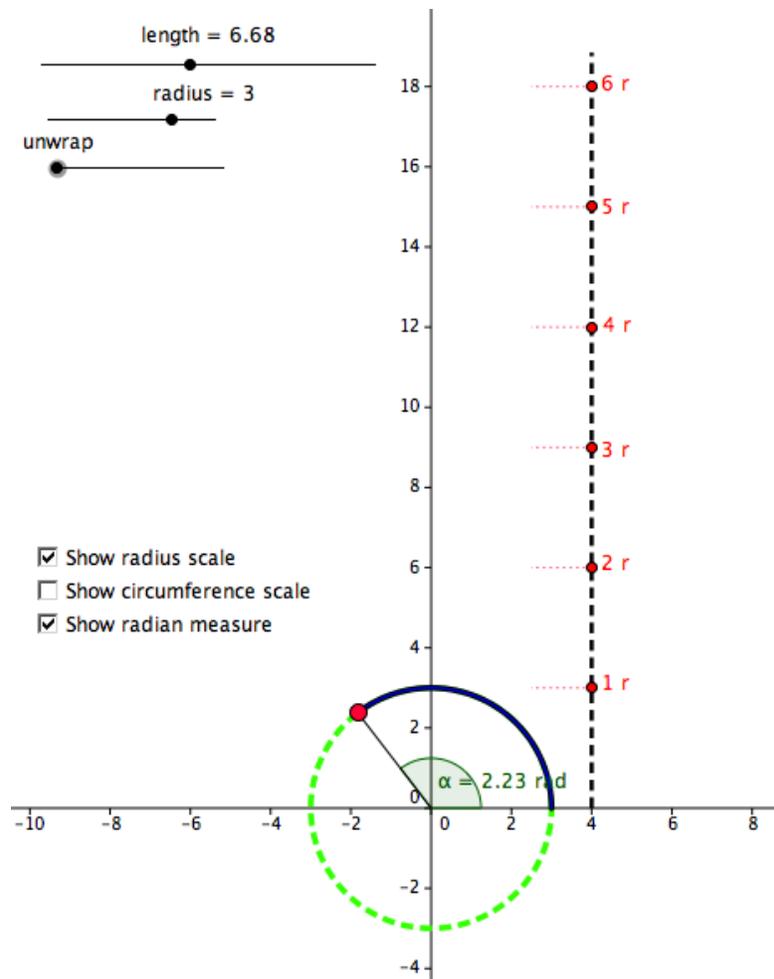


This new understanding unlocks powerful applications in other parts of the curriculum. The formula for the circumference of a circle is now viewed as a measurement. When we say we are really talking about how the full circumference of the circle is roughly 6.28 times as large as the radius of the circle. That is, we measure the circumference in radius units. The images below illustrate an “unwrapping of a circle” that shows how the arc length of a circle can be measured in terms of radius units (radians) on the vertical scale. For the example shown below (Figure 4), we can think multiplicatively about the arc length by reasoning that the arc length is 2.23 times as large as the radius. This way of thinking leads to a meaningful understanding of radian measure.

### Figure 4: Unwrapping a Circle

[http://tedcoe.com/math/?page\\_id=144](http://tedcoe.com/math/?page_id=144)





Similarly, when we say we mean that the area of a circle can be measured in terms of  $r$ -squared units. And, it takes roughly 3.14 copies of those  $r$ -squared units to cover the area of the circle.

We also extend the multiplicative reasoning to similarity, proportionality, and the right triangle trigonometric functions. Proportionality provides an interesting exploration, as it is more than two fractions set equal to each other. We start by asking the teachers to explain what they mean when they say two quantities are proportional.

### Classroom Implementation

All middle school mathematics teachers participating in our professional development program participate in content-based workshops/institutes and enter together into a Collaborative Community of Learners (CCOL) facilitated by community college faculty. The CCOLs are

designed to support the emergence of an intimate collaborative between the CCOL facilitator and the middle school teachers. The primary outcome of the CCOLs is for teachers to make their teaching practice public. The CCOL name was adopted because its emphasis on "learner" suggests that each member of the collaborative is both learning *with* and learning *from* other members of the community for the purpose of enacting a shared research-based vision of effective learning experiences for students.

Our CCOLs are designed to enhance teacher collaboration by building communities within schools to support teacher practice and increase teacher retention. The CCOL design draws from the body of literature on professional learning communities (Cox, 2005; DuFour & Eaker, 1998; Hord, 1997), as well as our experience through the NSF-funded *Project Pathways* and *TPC2* projects. Research findings from *Pathways* have revealed the importance of a strong CCOL facilitator who has deep and connected understandings of key mathematical concepts. Each CCOL consists of one facilitator and a group of teachers ( $n < 6$ ) meeting 30 hours per year.

During the first semester, each CCOL articulates its own shared vision and goals, identifying content areas and standards where students typically struggle. The CCOL will define learning goals for students focusing on (1) prior knowledge needed, (2) what it means to understand those ideas and (3) what it sounds like when students understand. One or more teachers in the CCOL will implement a collaboratively designed task with observers collecting data and focusing on student learning. Afterwards, the CCOL members reflect on their own learning and their students' learning.

Teachers have begun to regard their CCOL as an important element of their professional practice. CCOL facilitators and middle school teachers form collaborative teaching teams to embrace and create an environment for public-openness of teaching. CCOL facilitators serve as

instructional coaches by observing teachers during classroom instruction and providing them with feedback. On occasion, the facilitator teaches middle school classes so that classroom teachers can observe the facilitator as teacher in the middle school setting.

## **Conclusion**

Focusing on the development of big ideas, such as multiplicative reasoning, can impact student development of sense making, reasoning, and problem-solving skills. Students who are able to flexibly and powerfully reason and problem solve will be prepared to succeed in this ever changing, complex world. We encourage teachers to consider how they can change their teaching practice, their beliefs about mathematics, and their curriculum so that students are encouraged to persevere in the study of mathematics. The combined approach to professional development described here with content enhancement and the formation of a supportive collaboration of teachers in CCOLs has been a powerful tool for growth in many middle school teachers.

## Appendix 1

### Diagnostic Instrument for Problem-Solving Behaviors

(Adapted from Geiger & Galbraith, 1998)

#### Engagement

Problem is read	Key words underlined	Givens and goals established	Givens and goals represented symbolically

#### \*Executive Behaviors

\*Planning: Did you make a *plan* or “jump into” this problem? Did you make any *conjectures regarding the answer or possible solution path*?

--

#### \*Monitoring/Control

Recognition that a solution pathway will lead to a dead end	Changing from one solution pathway to a different solution pathway

#### \*Heuristic Strategies

Appropriate strategy initially selected	Data organized	Multiple Strategies used to make progress or clarify	No heuristic used

#### Verification

Checked if answer was reasonable	checked correctness of answer	Checked for errors in solution	No verification used

#### Mathematical Practices and Habits: Solution (is)

Based on reason/logic	Thorough/Complete	Neatly organized	Attended to Precision	Correct

#### Resources: Knowledge is

Complete	Sound with minor errors	Some but significant faults appear	No knowledge

#### Beliefs and Attitudes: Problem Solver Exhibited

Persistence	Confidence	Curiosity

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# DEVELOPING SKILLS FOR A GLOBALISED WORLD THROUGH COMPUTER BASED SCIENCE INSTRUCTION

By

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## Abstract

The benefit of the computer, which is the most influential technology of the last millennium, has been widely acknowledged in education and as a powerful agent of globalization. Computers have fundamentally changed the ways in which we measure, handle data and access information. This has made it necessary to provide computer supported environments in higher institutions of learning with the expectation that the nation will become well positioned to be part of a "New Global Economy powered by Technology, fuelled by information and driven by knowledge". The emergence of this new global economy implies that Teacher education institutions must produce teachers who will ensure future generations are effectively equipped with the scientific and technical literacy, knowledge, skills and confidence to compete in the global economy. In this quasi- experimental study, two computer based learning tools , Microsoft PowerPoint presentations and the internet were used to actively involve pre-service science teachers in a college of Education in Nigeria in learning selected science concepts. The study answered three research questions relating to the efficacy of both learning tools in improving teachers' science knowledge, computer skills and their confidence to learn with technology. Participants, who were randomly assigned to the two experimental groups and the control, were involved in carrying out science projects using these tools. Data was collected using a science achievement and skills test and an attitude to computer questionnaire. Both descriptive statistics and analysis of variance were used to analyze data. The findings and their implications were discussed.

**Key words:** Computer, PowerPoint, Internet, Pre-service Teachers

## Introduction

One of the many challenges facing developing countries today is how to prepare their society for globalization and the information and communication revolution. Policy-makers, business executives, NGO activists, academics, and members of society are desperately concerned with the need to make their societies competitive in the emergent global economy. Many international organizations such as United Nations Development Project (UNDP), Asia-Pacific Development Information Project (APDIP) and many more shares the belief that with enabling information and communication technologies (ICTs), countries can face the challenge of this age. Globalization and technological change have accelerated in tandem over the past fifteen years which created a new global economy that has serious implications for the nature and purpose of educational institutions.

As the half-life of information continues to shrink and access to information continues to grow exponentially, schools cannot remain mere venues for the transmission of a prescribed set of information from teacher to student over a fixed period of time. Rather, schools must promote 'learning to learn', i.e. the acquisition of knowledge and skills that make possible continuous learning over the life time. Tinio, (2011) concluded that the illiterate of the 21<sup>st</sup> century will not be those who cannot read and write but those who cannot learn, unlearn, and relearn. She buttressed, that concerns over educational relevant and quality coexist with the imperative of expanding educational opportunities to those who have been made vulnerable by globalization especially the developing countries in general, low-income groups, girls and woman, and low - skilled workers in particular. Global changes also put pressure on all group to constantly acquire and apply new skills. The international labor organization (ILO) defines the requirement for education and training in the global economy simply as 'Basic Education for All', 'Core Work Skill For All' and 'Life Long Learning For All'.

Nkanga, (2007) submitted that In Nigeria, there are several initiatives geared at accelerating development through the technological platform in the polity though concluded for Nigerians to align in a globalized economy, the government must adopt the computer as a major working and playing equipment which he wrote it is the only way to make Nigeria a

global participant in the emerging global economy. This also is to start from the nation educational system and make the study of it compulsory from the nursery and primary to tertiary level. When the institutions of learning in the country are made to adopt it wholly, the drive to make Nigeria compliant will be effective because the seed of the adoption of the computer that will translate to a revolution would have been sown. If the present educational system is 100% equipped to produce globally competitive graduate, the future development of Nigeria will be guaranteed. Jekayinoluwa and Ojo, (2010) argued that with the increase in technological drive and the need for efficiency, accuracy and speed necessary to enhance success in industries and commerce, and the inevitable roles of ICT in every facet of our society, much attention has been focused on the use of computerized equipments in educational institutions.

Computer, According to Roblyer (2003) is “a set of devices designed to work together to accomplish input, processing, and output functions in order to accomplish tasks desired by a user”. Thus, the computer operates on the basis of input-process-output. And with the current trends in the educational sector, modern day teachers are expected to learn and be able to do so many things as a societal expectation on them are increasing daily. They are not only expected to be sound in their subject area and basic pedagogy, but also expected to model higher order thinking processes, work in interdisciplinary terms and demonstrate leadership and communication skills. According to Jekayinoluwa and Ojo (2010) the functions of teachers in education process is considered prominent especially when we consider teaching and learning process as acquisition of knowledge and skills by individual to enable them become useful members of the society.

Computer based science Instruction will not only provide means to fulfilling curriculum needs, but will also offer a unique opportunities to extend work in the science classroom. Just in line with Wisner and Olson (2003) who categorized it as “anytime anywhere learning” especially the presentation of teaching material on a large screen coupled with the Internet and many more which offers a means to enhance whole class interaction and participation. When used well, Computer affords insight, possibilities and efficiencies that are difficult to achieve in

fixed term as in conventional classroom. According to Gbadamosi, (2006) the contemporary traditional teacher training approaches are simply not equipped to deal with all these new expectations and majority of our teacher trainers are also known to be too pessimistic in their perception and attitude to change. This is particularly so when it comes to playing key roles in allowing computers technology to permeate their professional practice and development without dwelling on the low level of connectivity, low ratio of personal computer per house hold, and many more others that influence greatly their level of readiness to join the global coach most especially in Science subjects of which recordings of practical experiments, observations and demonstration are made in both formal and informal text.

To prepare student for the globalized age, a complete exposure to a variety of computer tools and computer based applications such as use of power point presentations and the World Wide Web is very necessary in all teacher training institutions in Nigeria. Roblyer, (2003) defined the internet as the mother of all networks because it is a network of networks which enables people to communicate between or among networks. A major benefit of the internet system is the wide range of information available and services provided. Once connected, users can use it to exchange messages and files among themselves and with others anywhere in the world and information can be used to locate virtually any place in the world. The internet is widely available, easy to use and highly visual and graphic with searching resources including web browsers, search engines, Gophers and digital resource centre. While communicating in writing on the internet involves e-mail, list servers, Bulletin board, Chat rooms, and instant messaging.

This work illustrates how computer based Science instruction can make a distinctive contribution to teaching of Science, Its use to plan lessons that take advantage of computer to promote better learning. As a tool used by today's Scientists, the use of Computer and the Internet with relevant skills reflects the direction of Science in the 21<sup>st</sup> Century. It is furthermore a tool for learning which extends students' ability to exercise choice, work independently and make connections between their studies and the wider world.

## **Statement of Problem**

This study sought to determine the possible effects of two computers based learning tools, Microsoft PowerPoint presentation and the internet on pre-service science teacher achievement in learning selected science concepts. From this main problem, the following research hypotheses were generated to guide the study;

**Hypothesis 1.** There a significant difference between the Science concepts achievement of computer based instructional groups (power point and internet) and that of conventional teaching method .

**Hypothesis 2.** There a significant difference between the Science concepts achievement of those who combine PowerPoint and internet and those who learn with either of the two separately

**Hypothesis 3.** There is no significant difference between the Computer Skill of Computer based Instructional group and that of Conventional Teaching Method.

**Hypothesis 4.** There is no significant difference between the Computer Skill of those who Combine PowerPoint and Internet and those who learn with either of the two separately

## **Research Method**

The population consisted of all Basic Science pre-service teachers in part one, 2011/2012 session of the College of Education Ikere-Ekiti Nigeria. The study sample consisted of sixty(60) pre-service science Teachers, Who were randomly selected and assigned to four groups I, II, III and IV in a quasi-experimental study ( see table1 ). From a total of ninety six (96) pre - service teachers, this set of students was chosen for the experiment because as fresh

students in a teacher training institution they have not been previously exposed to the topics used for study.

**Table 1:** Frequency distribution of subjects for the study

Groups	Experimental Groups			Control Group	Total
Treatment	I	II	III	IV	
	Microsoft PowerPoint	Internet	Microsoft PowerPoint/internet	Conventional	
Subjects	10	10	10	30	
Total	30			30	60

Groups I, II and III were made experimental groups while group IV was made the control group.

### Research Instruments

Three research instruments were used for the study

1. A validated, researcher designed computer based science instruction guide (CBSI) treating two Basic Science Topics in the Nigeria Certificate in Education (NCE) curriculum i.e. matter and Energy.
2. A – 40 item multiple choice science concept achievement Test (SCAT) on matter and energy, designed by the researcher which gave a reliability index (Kr 21) of 0.88 when tested on a sample of forty subjects.
3. A Self Reporting Questionnaire tagged Computer Usage Competency Tool (CUCT) with YES or No format was generated by the researchers to assess the Computer Skills of the respondents. This was based on simple Computer operations gathered from experiences

and best practices over the Years and it comprises of a total of five (5) factual items tailored towards investigating the students' competence in usage of Computer.

### **Data Analysis**

A pretest- post-test control group quasi-experimental design was used for the study. The four groups were given the SCAT as a pre-test in order to be sure that they all have the same entry for the topics chosen.

### **Group Description**

**Group I:** subjects were made to learn science concepts with computer using Microsoft power point presentation and the internet. Members of this group were able to view and interact with the concepts as teacher made power point presentations on a large screen as well as interact with their computers sourcing information from the internet and making their own power point presentations.

**Group II:** subjects were made to learn the science concepts with computer using the internet. Members of this group own their personal computers and were provided with internet access for the sake of this study. They were required to source for information on the topics from the internet and to organize such as study notes.

**Group III:** subjects were made to learn science concepts with the computer using Microsoft power point presentation both teachers made and their personal presentations. Members of this group were able to view the topics treated on a large screen.

**Group IV:** subjects were not allowed to use computer at all. They were made to use their textbooks and then listen to their lecturer talk while they copied notes from the chalkboard during the four weeks of the experiment. They merely served as the control group.

The pre-test administration took place long before the treatment (about four weeks) to avoid carry over, memory and transfer effects. The groups were treated for four weeks, two weeks for each topic. After the treatments, all the subjects were given the same SCAT as a post-test. In addition, students also responded to Self-Reporting Questionnaire

Two lecturers from the Basic Science Department assisted in the study that had been trained and assigned to monitor the groups and to ensure that the right kind of environment was maintained for both experimental and control groups, particularly for the Microsoft power point presentation group and the internet group.

### Results and Discussion of Findings

The post – test scores of the subjects in the four groups were processed for analysis.

**Table 2:** Summary of post-test scores of experimental and control groups

Group	N	Mean	S.D.	ΣX
I	10	15.12	1.18	302
II	10	11.70	3.12	234
III	10	12.08	1.56	242
IV	30	9.64	1.48	578

The grand mean of (experimental) group I, II, and III was compared with the mean of control group IV subjects, using a T – test of significance which is presented in the table below.

**Table 3:** t – test analysis of science concept Achievement of Experimental and Control groups.

Group	N	Mean	S.D.	T. Cal	T. Crit	Remarks
Computer Instruction	30	12.96	1.95	5.27	0.99	Sig.
conventional Instruction	30	9.64	1.475		P<0.05	

Result significant at 0.05 levels.

The result indicates that there is a significant difference between the post-test scores of computer based Instructional group.

The Computer Based Science Instructional groups (I, II and III) performed significantly better ( $X = 12.96$ ) than the Conventional Instruction group ( $X = 9.64$ )

To test the second hypothesis, the post test mean scores of groups I, II and III were subjected to Analysis of variance (ANOVA) test. The summary of the test and the result is presented below.

ANOVA test of Groups I, II and III (Computer Based Science Instructional groups)

**Table 4:**

Source of variation	SS	df	Ms	F.cal	F.crit.	Remark
Between group	188.21	2	94.11	7.42	1.25	Sig.
Within group	361.7	55	6.58			
Total	549.91	57				

Result significant at 0.05 level

From the table,  $f$ . calculated = 7.42 and is greater than  $f$ . critical = 1.25. This result is significant.

Thus, there is significant difference in the mean of post-test scores of the three groups. The combined group using power point presentations and the internet recorded the highest mean score (Group I =15.12) followed by the PowerPoint presentation group (Group III =12.08 ) while the internet group recorded the lowest mean score (Group II=11.70).

**Computer Usage Competencies Analysis of Students**

**Table 5.**

Point scored out of 5 items	Computer based science instructional groups						Conventional Instructional Group	
	Combined group I		Separated group II		Separated group III		Group IV (CONTROL)	
	N	%	N	%	N	%	N	%
<b>Rom chips stores information permanently in the computer memory</b>	5	50%	7	70%	4	40%	3	10%
<b>Keyboard is an output device</b>	7	70%	6	60%	8	80%	4	13.33%
<b>CD-ROM is not an optical storage device</b>	4	40%	3	30%	4	40%	2	6.66%
<b>Software devices are of 3 types</b>	8	80%	2	20%	7	70%	2	6.66%
<b>Power point is not a system software</b>	6	60%	5	50%	2	20%	1	3.33%
<b>TOTAL POINTS</b>	30	60%	23	46%	25	50%	12	8%
<b>N</b>	10		10		10		30	

**Note: Only Scores below three (3) is categorized as low Competence while Scores from three (3) and above is regarded as high Competence.**

**Contingency Table Comparing Computer Competence of Computer Based Science Instructional groups and Conventional Teaching Method group**

**Table 6.**

**FREQUENCY DISTRIBUTION**

<b>GROUP</b>	<b>YES</b>	<b>NO</b>	<b>X<sup>2</sup> Calculated</b>	<b>X<sup>2</sup> Table</b>	<b>D f</b>
<b>Computer based science instruction</b>	<b>78</b>	<b>72</b>	<b>99.72</b>	<b>3.84</b>	<b>1</b>
<b>Conventional teaching method</b>	<b>12</b>	<b>138</b>			

**\*Significant at 0.05 levels.**

From the Table, X<sup>2</sup> Calculated =99.72 is greater than the Table value =3.84. This result is significant and consequently, the stated Null hypothesis that there is no significant difference between the Computer Skills of Computer Based Science Instructional groups and that of Conventional teaching method is rejected.

**Contingency Table Comparing Computer Competence of those who Combine PowerPoint and Internet and those who learn with either of the two separately.**

**Table 7.**

**FREQUENCY DISTRIBUTION**

GROUP	YES	NO	X <sup>2</sup> Calculated	X <sup>2</sup> Table	Df
I	30	20	2.11	3.84	2
II	23	27			
III	25	25			

\*Significant at 0.05

From the table, X<sup>2</sup> Calculated =2.11 is less than the Table Value =3.84 indicating that the Null hypothesis stated that there is no significant difference between the Computer Skills of those who Combine PowerPoint and Internet and those who learn with either of the two Separately is not Rejected.

**Discussion of Findings**

The result of the analysis of collected data indicated that computer based instruction is more effective than the conventional instruction. The difference between the two groups is significant from the calculated value = 5.27 > Table value = 0.99. Therefore, computer based Instruction is an effective method of teaching (and in particular) science concepts though this could be generalized to other school subjects. The effectiveness of the computer based groups could be attributed to the general attributes of computers in ensuring active involvement of students in tasks and the specific nature of the computer applications used (internet and

PowerPoint presentations). This is reflected in the Computer Competencies analysis table of 52% by computer based science instructional groups against 18% by Conventional Instructional group

A good understanding of the internet and its efficacious use paves the way for lifelong learning a view supported by Delors et al (1999) who maintains that the internet provides opportunities for acquiring the four major forms of learning outlined by UNESCO which involve learning to know, learning to do, learning to live together and learning to be. Learning to know relates to the acquisition of a broad area of knowledge relevant to different areas of life, learning to do relate to the acquisition of skills both occupational and general as well as other competencies necessary to operate in diverse situations. Learning to live together involves an individual being able to develop an understanding of other people and the interdependence of human beings, while learning to be addresses the issue of personal development of individuals in terms of rationality, personal responsibility and ability to act with greater independence Delors (1999). These areas of learning are vital for teachers to acquire if their training is to be relevant in a global context and this relevant knowledge, skills and dispositions can be acquired through interaction with situations and information on the internet. It has also been suggested in research that the use of power point presentations helps students learn more difficult and challenging content Nouri and Shahid (2005). These presentations equip users with the ability to receive, organize and display their knowledge in novel ways thus empowering them to take charge of their learning which is an advantage for teachers in this information and technology age.

This is a reflection of the submission of Tinio (2003) that Technologies such as Computers and the Internet have been touted as potentially powerful enabling tools for educational change and reform. When used appropriately, different computer based instruction are said to expand access to education, strengthen the relevance of education to the increasingly digital workplace, and raise educational quality by, making teaching and learning an engaging, active process connected to real life. This is also established in the result of the one way ANOVA test which indicated that there is a significant difference between the mean scores of the three experimental groups (f. calculated. = 7.42 > f. table. = 1.25). Consequently the three groups of computer based instruction were not found to be equally effective. It was found that using power point with internet mode of computer instruction was most effective than when they are considered individually. This was shown in the means of 15.12 by group I, 11.70 by group II and 12.08 by group III in computer based Science Instruction.

### **Conclusion of study**

The use of the internet and other computer applications like PowerPoint presentations has changed the concepts of place and time for education, as education has now been moved outside the school, so teachers can seek, evaluate, organize and share information with others all over the world. They can also be privy to knowledge and competencies outside their traditional subject domains. This ability to source for information, access, organize and share such defines the hallmark of an individual who is ready and fully equipped to function effectively in this era of globalization.

## **The Implications of this Study**

This study suggests to policymakers to define a framework for the appropriate and effective use of computer in their educational systems by first providing overview of the potential benefits of computer use in education and the ways by which different computer based instructions have been used in education thus far. Also to reckon with the basic challenges of its integration in education while making decisions. This include; educational policy and planning, infrastructure, capacity building, language and content with financing.

Teachers who should be in the fore front of innovations in education must not be left out while teacher education programs must be continuously revised to make them viable for the ever changing scenery of National and international life.

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Abstract

The case subject is a 57-year-old female whose diagnoses include organic brain disease, profound mental retardation, seizure disorder, and dysphagia. She has experienced pneumonia twice over a period of six months and has difficulty eating solid food. Her present situation has been reviewed to identify causes and to make recommendations for her future health care.

*Keywords:* organic brain disease, profound mental retardation, dysphagia, health care.

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### Problem/Situation Definition

*Symptoms requiring immediate attention.* My sister, Ann, has had two hospitalizations for bilateral pneumonia within the last six months. Following the last bout of pneumonia, she exhibited unusual breathing and choking sounds. Her ability to chew and swallow solid food has reached the point where the food falls out of her mouth. Minimal exertion causes her to weaken. She is no longer able to stand on her own during transfer from her bed to her wheelchair; a lift is required. She experienced a ten pound weight loss over a period of one month.

*Basic issues causing symptoms.* My sister, Ann, is a 57-year-old who has organic brain disease, profound MR, seizure disorder, and dysphagia.

According to the University of Maryland Medical Center (2008), “organic brain syndrome (OBS) refers to diseases (usually not psychiatric disorders) that cause decreased mental function.” During her birth at home, my parents report that the doctor used forceps to correct her breech position. In 1952, doctors faced with emergency situations in private homes did not have access to currently prescribed treatment. My parents report that dents on the side of her head were visible for a very long time, but, they did not recognize that anything was wrong for the first year. At the time, Ann was the youngest of nine children, and, the small house was in a constant state of noise and confusion with its 11 residents.

Currently, the following information is well known regarding breech birth (American Pregnancy Association, 2007):

In some cases, a breech vaginal birth may be possible, although the American College of Obstetricians and Gynecologists (ACOG) recommends that breech babies be turned by external cephalic version or delivered by planned c-section. A large study found that

breech babies delivered through the vagina had an increased risk of problems. This is, in part, because an infant who delivers feet- or butt-first can get its head stuck in the birth canal. The infant's body does not stretch the birth canal wide enough for the head to pass through, and the baby's skull cannot compress or mold to the birth canal as it does during a headfirst passage. This can cause a prolonged labor and fetal distress.

Although most breech babies are born healthy, Ann had problems from birth. Birth defects are slightly more common in breech babies and a birth defect *may be* the reason the baby does not move into the right position before birth. The disorder associated with OBS that Ann has is brain injury caused by trauma. Her profound mental retardation (PMR) is reflected by her cognitive ability level of about six to nine months; she has never had the ability to talk. She has had tonic-clonic seizures and petit mal epilepsy (absence seizures) since birth and they are controlled by medication.

Ann's dysphagia is a condition that causes a person to have difficulty swallowing and the person may also experience pain while swallowing. Eating may become a challenge which prevents the person from taking in enough calories and fluids to nourish the body. Another possible consequence is that a patient may aspirate foreign matter/bits of food into the lungs that may cause pneumonia. Bear in mind that a brain injury may affect the gag reflex which in turn can cause aspiration.

#### Justification for Problem Definition

The sources of information that I have used are Ann's chart review, staff consultation, and personal observation. Ann's chart indicates that her diet orders require a high-sided plate (placed close to her chest), hard plastic cup for liquids, and that the wheelchair armrests be under the table to allow her to be as close to the table as possible. She is supposed to remain upright

for 60 minutes after each meal. According to the various aids who work with Ann, they feed her when she is too lethargic and weak to feed herself.

I had the opportunity to observe Ann during both of her bouts of pneumonia in a hospital setting and in the long term, residential care facility where she resides. Ann sits upright in her wheelchair when she eats. Her spoon is attached to her hand to enable her to maintain “control.” She is able to drink from a plastic cup if someone places it in her hand and if it is removed from her hand, when she finishes drinking, and is placed back on the table.

According to my mother, she was notified via telephone that Ann was going to be given an influenza shot approximately eight months ago. Several weeks later, an anonymous staff member called my mother, late at night, to tell her that Ann was very sick and that someone needed to come and check on her. Shortly after that, a nurse called to say that Ann had a diagnosis of pneumonia. When my sister from Virginia and I went to the center, we observed that Ann was very weak and unresponsive to us for the first three days. By the end of the two weeks that we were in South Carolina, Ann seemed to have improved.

Several months later, my mother received notification that Ann was scheduled to have a regular, health test performed. On the morning of the test, a staff member called to say that Ann was very weak, having trouble breathing, and that she had been receiving breathing treatments for a week. They were going to send her to a local hospital emergency room. Again, my sister from Virginia and I reached the hospital within an hour of her arrival and subsequent admission as a patient.

We observed that Ann was having great difficulty breathing, her lips were extremely swollen, and she was not responding to touch or sounds from us. An aide had been sent with her from the residential facility where she lives. However, the aide seemed to be reluctant to answer

any questions that we posed. So, we began to question the nurses and hospital aides. According to the nurses, they had assumed that her grossly swollen lips were their normal size. When I mentioned that her labored breathing was similar to that of another family member when he had pneumonia, the nurse dismissed my suggestion as unfounded. Interestingly enough, a physician diagnosed Ann with bilateral pneumonia the next morning.

My sister and I both asked if Ann could have Benadryl or some medicine for her swollen lips because we believed that she was having a reaction to some unknown medication. We were finally able to find out that her lips had begun to swell when she was given the pre-meds for the unknown test.

Ann's inability to talk and her functioning level results in her level of care being determined by whoever is observing her or tending to her personal needs. The aides' reluctance to speak out does not serve Ann well. According to the head nurse on duty each day, the primary source of information for treatment for patients, such as Ann, at low functioning level is visual observation.

#### Alternative Courses of Action

Prevent future episodes of pneumonia – Aspiration issues?

Diet order and adaptive dining equipment – Consult with dietitian and Speech

Pathologist.

Maintain weekly contact with nurse and social worker and ask for progress reports via telephone and E-mail.

#### Evaluate Alternatives

Proper bed positioning will most likely address apenic episodes and prevent pneumonia.

Pureed food and honey thick liquids can be swallowed without choking and spillage. This might eliminate the possibility of particles of food going into her lungs. Use of hard plastic cups will eliminate the possibility of her breaking the cups that she uses.

#### Choice of Action

We will consult with the social worker who represents us at meetings regarding Ann to request the following:

Prevent possibility of Ann having future episodes of pneumonia caused by food particles going into her lungs by bed positioning and remaining upright for an hour after eating.

Continue diet order and adaptive dining equipment approved by dietitian and speech pathologist.

Call and visit frequently to monitor that she is propped up when she is in bed so that she has less likelihood of choking.

Maintain weekly contact with the head nurse and social worker and ask for progress reports.

#### Implementation of Alternative

Prevent pneumonia – consultation with pulmonologist due to indication of possible aspiration

Prevent apenic episodes – pulmonologist and physical therapist consultation to assure positioning protocol for bed and wheelchair.

Diet order from speech pathologist – puree diet texture, no bread, no grits, and honey thick liquids. Thickener used by staff to thicken thin puree food

#### Conclusion

My mother is elderly and unable to travel back and forth on a regular basis. We will request E-mails from Ann's social worker with updates on the alternatives that we are

requesting. We have updated the contact list for phone calls and E-mails. Basically, my sister who lives in Virginia and I will receive E-mails and phone calls will go directly to my mother. The progression of illness for Ann correlates to those referenced by Woods, et al. (2008) in *Palliative Care for People with Persistent Mental Illness: A Review of the Literature*. Staff members at her facility try to avoid any reference to terminal issues at all times. Consistently, telephone reports have not correlated to Ann's actual health condition that we observe when we arrive at the facility. So, we know that we have to be her advocates and monitor her condition so that we can make informed decisions about our involvement in her health care.

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## **Parent Perspectives and Experiences of Their Children with Asperger Syndrome at School**

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**Abstract:** Parents of children with Asperger syndrome, a condition on the autism spectrum, are more likely to undergo serious distress than parents of children with other disabilities. In the school environment, their children struggle to fit in socially, are at increased risk from being bullied, and can experience severe anxiety and depression. Research on the perspectives and experiences of parenting children with Asperger syndrome is a developing field in special education and this paper advances a more informed understanding of parental experiences during their child's schooling years. Semi-structured interviews were conducted with 19 families in New Zealand, and preliminary themes identified include a lack of awareness and understanding in schools regarding Asperger syndrome, specifically in the areas of vulnerability to bullying, reluctance for written work, and the potential for sensory overload. The struggle to secure appropriate academic, social and transitional support for their children was perceived as a major stressor. Parents developed strategies and positive adaptations with the potential for informing educational interventions. The emerging themes highlight current issues in education regarding safe schools, achievement gap, building on children and young persons' strengths, and parent involvement.

### **Introduction**

Parents of children with autism spectrum disorders (ASD), including Asperger syndrome (AS), are more likely to experience serious psychological distress than parents of children with other disabilities (Abbeduto, Seltzer, Shattuck, & Krauss, 2004; Bromley, Emerson, Hare, & Davison, 2004; Luther, Canham, & Young Cureton, 2005; Meadan, Halle, & Ebata, 2010; Ministries of Health and Education, 2008; Sivberg, 2002). This paper is drawn from the early analysis of a study gathering the experiences of parents having a child/children with Asperger

syndrome. The study aims to identify the stressors for parents of children with Asperger syndrome and their contributing factors, as well as explore opportunities for timely family support. This paper focuses on the challenges their children faced at school, one of the principal factors of stress identified by the families. Factors contributing to their children's stressful school experiences included school staff's lack of familiarity with Asperger syndrome, and the appropriate classroom interventions to deal with bullying, written tasks, and sensory overload. Limited school support was noted as a significant obstacle to academic and social learning, as well as for coping with transitions.

## **Background**

In May 2013, the American Psychiatric Association removed Asperger syndrome as a separate diagnosis and placed it within autism spectrum disorders. Asperger syndrome shares the triad of difficulties in reciprocal communication, social interaction and social imagination with other autism spectrum conditions (Gillberg, Nordin & Ehlers, 1996). There are problems with a theory of mind or the inability to recognise other people's thoughts, feelings and intentions (Frith & Happé, 2005). People with Asperger syndrome may also have the following characteristics: intense interests in a particular subject area or topic; strong desires for predictability and routine; formal language choice and patterns; odd voice tonality; non-verbal communication difficulties; and motor clumsiness (Attwood, 2008; Gillberg & Gillberg, 1989). Repetitive mannerisms and sensory sensitivities are common, and obsessions and compulsions may emerge (Attwood, 2008). Frith and Happé (2005) note a "strikingly uneven profile of abilities and difficulties" (p. 789) and there is general consensus around a diverse range of functioning. Depression and ADHD have high comorbidity rates with AS (Attwood, 2008; Ghaziuddin, Weidmer-Mikhail & Ghaziuddin, 1998). Lasser and Corley's (2008) research lists six positive characteristics of people with AS: "remarkable memory, superior academic skills, visual thinking, recognizing order, passion and conviction, and comfort with adults" (p. 338). Attwood (2008) describes people with AS

attending to fine detail, being honest and possessing a strong sense of social justice.

School aged children with Asperger syndrome experience bullying at a four times higher rate than their peers (Little, 2002). Zablotsky, Bradshaw, Anderson, & Law (2013) found from a study of over 1000 parents of children with ASD that the majority of their children had experienced bullying and that children with Asperger syndrome that had attended public schools or were in a general education population were at the greatest risk of being bullied in the past month. Poor social and communication skills, inability to imagine what others are thinking, and inaccurately reading facial expressions and body language puts them at heightened risk for bullying (Attwood, 2004; Sofronoff, Dark, & Stone, 2011). Children with AS can be blunt when commenting on the faults of others, interrupt their peers during conversations, speak at length about their special interests, and interpret conversations literally. They make poor eye contact and can appear aloof. Their difficulties in making friends or joining in with others creates isolation. Since Asperger syndrome is “invisible” as such, peers and school staff might consider these children rude, insensitive and odd.

There is a critical need for school supports to protect children with AS against bullying, and the appropriate social skills taught for successful interaction (Attwood, 2008; Winter, 2011). Jordan (2005) echoes the importance of teaching a social curriculum to compensate for what does not come intuitively to children on the spectrum. Further research is needed to study the strategies, adaptations and accommodations children with AS need in educational settings.

### **Prevalence and Diagnosis**

The number of children being diagnosed with an autism spectrum disorder is growing faster than any other developmental disability (Troy, Connolly, & Novak, 2007). There are conservative estimates of two to six children out of every 1,000 children identified with AS, with three to four times more boys than girls (NINDS, 2012). In New Zealand’s population, the incidence of ASD is considered to be approximately 1 in 100 (MOE, 2011). According to Attwood (2008), only half of the children with AS are being detected at the

present time if using the Gillberg criteria. Asperger syndrome is rarely brought to the attention of clinicians before the ages of 5–6 years, with a diagnosis usually occurring between 7–8 years, though in retrospect, difficulties with communication, social interaction and behaviour were noted as being present (Gillberg et al., 1996; Ghaziuddin, 2010).

## **Methodology**

Narratives offer rich, multi-layered descriptions of psychological and social phenomena (Jossleson, 2006) that contextualises how the parent, as a narrator, is experiencing the stressors within their family life. Cotton and Griffiths (2007) state:

The point is not to tell some universal truth about the world, but rather to tell particular truths in order to allow us all, tellers and hearers, to reassess what we understand of the world and so of our own possible actions within it. (p. 550)

A qualitative approach to gathering data on parent perspectives and experiences allows for an in depth analysis of the complex factors involved and examine adaptation occurring over time.

This study involved 19 families with a child/children diagnosed with Asperger syndrome currently living at home. The participants were drawn from the greater Wellington region in New Zealand and included 19 mothers, six fathers, and one grandmother. The participants were recruited online from two parent support organizations with the study receiving ethical approval through Victoria University of Wellington. The majority of the parents were from New Zealand, with nine parents born overseas (Australia, South Africa, U.S. and Britain). The children included four girls and 16 boys with Asperger syndrome, diagnosed between three and half years old and shortly before the age of 15. The current ages of the children were evenly spread from five to 22 years of age. In the study there were a set of twins with one twin having AS; a set of siblings both

diagnosed with AS; and one set of siblings diagnosed with AS and the other autism. Four of the mothers were divorced and 15 were living with partners, with three of those mothers in relationships where the father traveled extensively. Other comorbid diagnoses disclosed in the interviews included anxiety disorder, attention deficit and attention deficit hyperactivity disorder, depression, dyslexia, epilepsy, oppositional defiant disorder, and sensory processing disorder.

The parents participated in a semi-structured interview lasting for approximately one hour, and these usually took place in their home. Most parents were interviewed individually, but some preferred to be interviewed together. The questions were broad in nature with allowance for the stories to unfold naturally. Parents were encouraged to share experiences about their child or children that stood out for them. These stories usually included the diagnostic process, school experiences, when support was or was not received, and hopes for their child's future.

The transcripts were examined for events and circumstances that were noted by the parents as challenging or stressful, and the contributing factors from the parent's perspective identified. Coping strategies and positive adaptations being utilized by the parents were identified as well. General categories were coded during initial readings and then condensed in relation to similar sub-concepts before assigning a theme (Miles & Huberman, 1994). Detailed notes and a reflexive journal were used and referred to throughout the process of this preliminary data analysis (Creswell, 2007).

## **Theoretical Framework**

Positive adaptations to a challenging situation are supported with the theoretical underpinnings of stress theory. This theory was originally developed by Hill (1949) in his book *Families Under Stress* and was described as the ABCX model of stress. Hill hypothesizes that a family's stress is determined by (A) the event (B) their resources (C) their perceptions of the event's significance and then (X) their reaction to it. McCubbin and Patterson (1983) developed a Double ABCX model that incorporated multiple events (Aa), additional resources (Bb),

altered perceived contributions (Cc), as a result of the family's reactions (X). Later, McCubbin, Thompson, and McCubbin (1996) conceptualized the resiliency model of family stress, adjustment and adaptation. This model outlines an adjustment phase, such as when ASD is diagnosed. Reframing, or seeing the situation with a different view or understanding, may occur during this phase.

Family resilience theory captures the constructs of stress, coping and adaptation within the family unit considering both social, relational and developmental contexts and the adaptation processes that eventuate within families (Patterson, 2002). Walsh (2003) challenges the deficit-based approach to families as damaged or broken when faced with adversity to one that acknowledges parental strengths. It presents a family's experience as having common and unique features, with different strategies utilised to meet new challenges as they arise.

## **Findings**

The difficulty of their children adapting to school emerged as an area that caused considerable stress for the parents in this study. According to the parents' perspective, a lack of awareness and understanding on behalf of schools became problematic in the areas of bullying, written tasks and sensory sensitivities. Parents identified limited academic, social and transitional support as a major obstacle to their children's ability to learn. Strategies and positive adaptations developed by parents were noted throughout the interviews.

### **Lack of Awareness**

A lack of awareness about Asperger syndrome in schools was a factor identified by many parents as impediment for the necessary accommodations their children needed to adapt to the school environment. John, the step father of 22-year-old Max, said "it was almost Groundhog Day year in year out" because his son's teachers would say at the beginning of the year "Oh, he's a happy little kid and just seems to be getting on like all the others, and then, six months later they're going, oh yeah, Max is a bit different." Tessa, the mother of 13-year-old Zack, shared a similar story, "You have to go through the same things every year,

I go in I make the profile book up and half the teachers don't even read it, so you go to all that effort and you go in and try and make it successful."

**Vulnerability to bullying.** School staff's lack of awareness about their children's susceptibility to being bullied was an area of deep concern for parents. They noted that their children were vulnerable due to their limited social and communication skills, and inability to build and maintain friendships. Tessa related the following:

He's very polite, very interested in facts, has very big trouble with social things. He struggles heaps at school, we've had a very hard schooling time and still do. He has quite a few melt downs and quite bad anxiety, it got worse once he hit intermediate and the first year was so hard and so they treated that and then diagnosed anxiety disorder and now he's with [service agency]. He's just, as he said, his favorite friend is Sheldon Cooper, if everybody was like Sheldon Cooper it would be a great world. He's quite funny, he's come a long way learning with jokes and stuff, but he is very obsessional, very routine orientated, we've come to realize we've had terrible bullying at school.

Tessa explained further:

It actually turned quite nasty to a point where the kids told him he should go kill himself and then we had a real bad one at the end of last year with his confidence and everything and why do people want me dead and they took his pencil case to wind him up and the teacher moved him out of his group and we tried to say don't move him, and he took a padlock to school and padlocked his desk and chair so the teacher couldn't move it and refused to move.

Tessa said when Zack was six years old "these kids gave him a thing they called a spy button, they said if you pull your pants down you will be in our spy club, so

of course, he was pulling his pants down..." and another more recent incident when his classmates were lining up to slap him at lunch each day:

He came home and I said to him over a week or so 'Why is your face so red?' but he had allergies so I thought that, but no nothing, he was getting angrier going to school, I would have to wrench his hands off the gate, he was doing half days by then, I would come and pick him up half days most days and I couldn't understand this red thing kept being on his face, ended up these girls had decided that they were going to have turns at slapping him, he was supposed to be in a music group learning a guitar, [the school] told me they would put a teacher aid with him, so that was successful, which never happened, so they decided that they could all gang up on him, so not only that, some boys, so 7 children over 7 days where having turns slapping his face...

Tessa assumed that looking at the school's printed resources and programs it appeared the school had never had more than a "broken leg" to deal with, and she felt like she was an outlier and troublemaker by bringing up the issue of bullying. After her son experienced repeated physical bullying she eventually withdrew him. Several parents related stories of their children being bullied physically, verbally and covertly. When parents reported bullying, they felt that the school would downplay the seriousness of it. For example, when Tessa reported that children were taking turns slapping her son, she said the school's leaders had replied, "It's not bullying, kids just do dumb things." Often, the onus was on the parent to prove that bullying was happening at their schools, which was complicated by their children's struggles to effectively communicate what had happened. Tessa explained, "when stuff happens he doesn't know how to explain it, he just shuts down and starts crying." Due to not understanding social rules, some of the children had come to expect physical and emotional abuse at the hands of their peers and subsequently experienced severe anxiety and depression. Parents often remarked that school leaders were not proactive when it came to bullying, and were reluctant to consider school wide programs that could address it.

**Difficulties with written tasks.** A repeating theme throughout the parent interviews was the difficulty their children had with written work. Parents felt that if teachers were aware that fundamental motor coordination is often challenging for children with Asperger syndrome, they would understand that writing assignments and tests by hand is cumbersome and time consuming. In addition, their children's desire to "do things right" would cause anxiety and frustration when their handwriting was not perfect. One mother explained, "He has really bad writing and he normally uses the computer, but you have teachers who think they can fix that and it's the anxiety that goes with it." In the parents' view, written tests became two tests for them, with the time restrictions making their children's anxiety acute. John and his wife Kathryn, expressed their frustration when Max was in secondary school:

*Kathryn:* He's hyper intelligent but he can barely write, he reads really well but he doesn't like reading, you know he only reads facts, you know, he's, but at the end of the day he's got intelligence tests that...

*John:* Absolutely, so again that sort of just came down to well there are going to be kids like this, so we tend to teach them a little bit more differently than this way, this is how they learn.

*Kathryn:* But as far as the school was concerned because he couldn't write he wasn't capable of doing very much, that's the problem.

*John:* So if you saw his writing, if you didn't know the boy and I put you, even his writing today, and you looked at it you would go gosh he's probably maybe a 12 year old, but his comprehension is above his age level, so this is the complete mismatch between his ability to actually physically write and his ability to comprehend, so again people start making judgments and assessment and they get it completely wrong...

Kelly, the mother of 17-year-old Daniel, said her son's teachers would hint at her son being lazy due to his reluctance to write anything down. After Daniel was finally diagnosed in high school, Kelly said she came to the following realization:

I found for Daniel that just having that diagnosis changed him in that it was almost okay, so now I know who I am, what's wrong with me, but now I have a, the label thing that came back to me, the headmaster who had said to me we don't want to put labels on it but I had seen from all the school reports that the teachers had put a label on it, they may not have written it out but they all thought he was lazy and that was the wrong label, I would rather he'd had that label way back then and had the right label than this lazy bright kid who doesn't want to do anything.

Parents perceived that their children's struggles with writing fluently by hand prevented them from demonstrating competence at school and there were strong misconceptions about their unwillingness to do it.

**Sensory sensitivities.** A need for awareness and understanding of the sensory sensitivities that a child with Asperger syndrome struggles with was a dominant theme for parents, especially with noise, peers in close proximity, and large halls and assemblies. Abbie, the mother of 15-year-old Thomas, shared this:

Obviously his disruptive behavior would cause a few problems at school, like exam time, they had exams then at the end of every year, anxieties around exams would be big, they tried to put him in a big hall with lots of people, which he couldn't cope with. He says it's like a symphony, all the pens on paper, he said I can hear it all and it's like a whole musical instrument all coming together at different speeds, so we decided maybe better a separate room, so then he'd be bullied because he was in separate accommodation, there was a whole load of stuff around the whole thing...

Parents identified sensory sensitivities as a significant challenge for their children to cope with throughout the day. Several of the parents shared stories of

their children experiencing sensory overload at school and then their children trying to hide or lash out. Parents overall spoke of a need for principals, teachers, and staff to be aware of this particular aspect of Asperger syndrome to better understand their children's behavior.

### **Increasing Learning Opportunities**

There was a strong sentiment from several parents that it should not be a question of how much support is necessary for school success, but rather what kind, even though the disorder is viewed as 'mild' in nature. The concept of mild was even seen as a disadvantage in parents' eyes – because of their child's intelligence, they felt that others considered their child's difficulties as easily surmountable and did not take it seriously. A few parents pointed out that Asperger syndrome is still a part of the autism spectrum and 'mild' meant their children were more successful at masking the more obvious characteristics than others more severely affected. Tessa explained "most people don't even see it because he is so good at hiding it now." There were several stories of teachers questioning parents about whether the child actually had Asperger syndrome or downplayed the problems.

Many parents thought that a better understanding of autism spectrum disorders would provide a stable foundation to work from and eliminate the need to fight for increased awareness and acceptance. Tessa described supportive teachers this way:

The teachers are what we call ASD believers, because at the end of the day they either believe it, who they are, or they try to fix them, that's how we feel, at least they have listened at the school and we've tried.

**Academic support.** Parents reiterated that their children needed help focusing on what was important, making sense of instruction, and organizing their work. The parents of the older children talked about the gap between their children's intellect and their school output becoming more noticeable as they advanced through the primary years until it reached a crisis point in secondary.

Most of the parents worried that their children would not be able to reach their full potential, and whether the schools their children were attending were the best match for their child. This worry was pervasive for the families interviewed since their children were scoring below average on the national standards and their intelligence was above average. Some parents started to alter their ideas of success, saying they were happy if there were no phone calls home for behavioral problems or when their child finished a test within the time requirements. Abbie explained:

He hadn't had a good year necessarily academically, but it was his best year ever in terms of attendance, of not being stood down, me never being called, it was a really successful year, but they base the success on credits and not on the bigger picture.

Sandy, the mother of David, aged 12, shared this when she asked him about a math test after school:

'I got it all finished', just the way he said it, and whether he got them all right or all wrong it didn't matter, he was just so confident when he came home, I don't think he ever finished a test his whole life in the time they've been given. I still don't know the results from that but to me that was a pass.

**Social skill support.** Parents conveyed a need for school support in the area of friendship building and social skill development. Most parents said their children had few, if any friends. In primary school, they described their children either as domineering and insisting on playing game repeatedly or a certain way, or wanting to play with children much younger. Later on, the stories involved their children being easily taken advantage of or becoming reclusive. They might make one friend, but if that friend moved away they were at a loss. The majority of parents shared the disappointment of their children not being invited to birthday parties or sleepovers. Kelly said about Daniel:

He doesn't have any friends, doesn't seem to really want to make friends. I think because he has tried in the past and been knocked about with it, abused a bit he has backed off, it is not worth the effort...

Parents identified support as essential to head off troublesome behaviors, such as hitting or losing tempers, as well engaging children not participating. After observing her son at a school event, one parent told her son's teacher, "it's almost like he is invisible." He had never qualified for funding support "because he was an angel at school, he just sat there, he didn't open his mouth and he was just quiet." Sandy described David at school this way:

He's struggling so hard because he's one of these kids that sits in the back of the class, and doesn't put his hand up so that's why the teachers think he's good. He sits there and doesn't have a clue sometimes what's going on.

**Transition support.** Most parents commented on the need for support during transitions, especially during the beginning of the new school year. Another problematic time identified was when there were staff changes at school. Routines go "belly-up" for the student when there are different teaching styles and expectations. Parents suggested a briefing packet for the interim person or the new hire, so problems could be averted beforehand and the transition less painful for the student and parents. One mother was grateful for a specialized program that included designing a comprehensive, individualized plan with parents and staff, "but then the next year gone...nobody transfers it to the next year." Having a chance to visit the teacher and classroom before a child moved to the next class made a big difference. A father said the children "come in and meet their teacher, put their stuff away in their classroom...that's amazing and the difference it made unbelievable." The parents who had access to transition funding from kindergarten to school or primary to middle school reported a more positive start. When a bad year followed a good year, Abbie said "I feel quite aggrieved about it because he'd had a really good year," or another

mother said “we think we are getting so far, we turn a corner and then his behavior just always goes back.”

In the search for the appropriate support, several parents had moved their children to different schools, hoping for a fresh start at another public school or sacrificing family resources to enroll their child in a smaller, private school. One parent told of interviewing staff at nine different schools before she bought her home in the school district that would be best for her son. Some parents chose alternative school placements or decided on home schooling after their son or daughter experienced severe bullying. Parents that had not decided to home school wondered aloud if they should have, saying in the same breath that it would be difficult to teach as well as parent a child with challenging needs and behaviors. Parents employed private tutors at home and paid for teacher aides at school, went over the assignments repeatedly at home, supplemented instruction with both remedial and advanced computer programs, and arranged for private diagnostic assessments for reading and math, especially if there were accompanying problems with dyslexia. Some parents expressed guilt about requesting extra funds for support, and did not envy the schools trying to juggle with their limited resources.

**Strategies and positive adaptations.** Parents had a strong desire to focus on what the child could do. Both Abbie and Tessa spoke of hearing an enormous amount of negative feedback that had a “roll on effect” on their families. Strategies that focused on the positive eased the stress that came with parenting a child with Asperger syndrome. One mother said:

Well mostly our home life is quite harmonious really because we, I think we’ve just learned to sort of work around his quirks. It’s more the outside world that’s a challenge for him. So at the moment we just, as a parent, I’m just sort of feeling my way through things that work for him and things that don’t and trying to accentuate the positive.

**Relationship building.** From many parents’ perspective, teachers that established a trusting relationship had a significant degree of influence over the

child's anxiety levels and their ability to function well at school. If teachers and school staff engaged with their children in a sensitive manner and established a rapport, these parents said it was possible for their sons and daughters to gain confidence, take risks and persevere. A mother stated, "if he forms a bond with someone he can progress." This connection came from an informed awareness of the challenges children on the spectrum faced. Tessa mentioned that a strong relationship with a teacher would help during a crisis time, as her son would trust and respect that person.

A few parents commented positively when their child's teacher capitalized on their child's special interests, which helped to establish a rapport as well. One mother told of her son's passion for protecting endangered animals and his class working with him to raise money for a conservation project. Oftentimes the child knew extreme amounts of information about their special interest, and could be called on to give reports or set up an informative corner in the classroom for the other students.

***Written tasks.*** Problem solving how children can demonstrate competence in a subject with minimal writing by hand went a long way towards managing anxiety and increasing motivation. A few parents said if teachers knew how hard it was for their children to write and finish tests on time it would allow alternative ways of showing mastery. These parents commented that the daily handwriting tasks in the classroom created a barrier for their children to demonstrate their knowledge. Being open to implementing accommodations, such as using laptops, oral presentations, and making allowance for more time on timed tests were mentioned. Kelly said that Daniel "struggled on without any help right through high school and I think it was his third year there, somebody had mentioned to him about the idea of using a laptop..."

***Sensory overload.*** Having an action plan in place was a wise approach when children did reach a boiling point so other children and staff could remove themselves from the vicinity quickly and limit interaction. Some of the parents related stories of the importance of all the school staff, especially playground staff and relievers, knowing the plan. When children with Asperger syndrome

are upset they have great difficulty processing words, so removing others from the area had a better success ratio than trying to negotiate.

There were some stories where parents reported that teachers and schools staff had put themselves in physical danger when they tried to restrain or remove their upset child. When their children were cornered and became distraught they lashed out, and then suspended because of school policies regarding hitting.

It was heartbreaking, I felt really bad for the teacher but she penned my son into a corner and got into an altercation with him over pushing and shoving with a basketball, 'Just walk away be the adult, walk away and deal with it when he's cooled down,' she went for his back, she moved a desk to get to him... He just couldn't control it and you could see it in his face, you, we never let things get to that point, but he's now learnt that it's not okay to hit no matter what and he's meant to walk away.

Some parents explained that when their children had meltdowns they were equally as terrified, and seem as perplexed about the sudden rise in emotion as the adults were. There were some stories of children hitting after being provoked, and expressing regret at home.

Some people are obviously more attuned to what the kids need than others but overall they make allowances but you can't make allowances when your kid hits somebody else, I wouldn't be happy if one of mine got hit, so there's the two sides, but it's not the way that you bring them up and you know why these things happened and it's the heat of the moment and that when everything has calmed down [my son] will know immediately that he has done the wrong thing and he will be remorseful and he will be angry and upset with himself but it is too late, the damage has been done and it doesn't necessarily mean having been through all that that it won't happen again in the next rush of blood to the head, that's really hard.

Being proactive at school was the best solution to help head off violent episodes by monitoring any changes in routine, excessive noise in assemblies, and noticing the anxiety and frustration that built up throughout day. Several stories illustrated how quickly their children could “lose the plot” and how difficult it was to converse with them after this happened. Two parents told of the importance for playground supervisors to know their children were on the autism spectrum and their propensity for being overwhelmed. Creating a less threatening scene and allowing time for the child to recover before any instruction was given was essential.

A few of the parents in this study thought it was much better to put supports in place throughout the day so that their children could let off steam by running or doing something physical. One parent said her son’s saving grace was being the PE monitor. He was allowed to move the PE trolley out before every break and get all the balls ready for morning and lunchtime play, and if anything needed to be carried during the day he was asked to do so.

To cope with sensory overload at school, one mother said her son would pick up a highlighter pen to say he needed a moment and the teacher would let him could go out of the classroom and do something different for ten minutes, such as walking around on the track. It was important that this quick transition was easy and doable for the child and did not entail bringing extra attention to him. This parent said no child likes to be singled out or put in a ‘special’ place so that teacher can keep an eye on him, so the strategy needed to be subtle and respectful. Parents said it would also be wise for teachers to incorporate checks throughout the day to determine how their children are managing.

***Ecological modifications.*** The majority of the parents related experiences pointing to environmental adjustments as easier and more sensitive solutions than ones that centered on changing their children. One school assigned a short-term teacher aide to observe a child’s classroom and playground surroundings that helped identify the triggers for his anxiety and compulsions. This was a change from teacher aides he had previously that concentrated on modifying his behavior. Another parent said that just changing her young daughter’s desk in the classroom helped:

[The specialist teacher] had lots of good ideas, like ask [my daughter] where she likes to sit in the classroom, that made a tremendous difference because where [she] had been sitting the children were looking in her eyes, so just by altering her chair it was suddenly better, giving her a buddy to do things, like to go the toilet with a buddy, go to the office with a buddy, just having a buddy made a tremendous difference.

Many parents expressed frustration when school staff held onto the notion that the responsibility to rectify the problems resided with their child instead of considering the school environment itself.

***Fostering communication.*** Coordination between home and school, when it occurred, created a positive working partnership between parents and school staff. Tessa said Zack “had a male teacher last year that was good for some things but I found the communication really hard, he wasn’t communicating, his teacher this year rings me, texts me and that has just been amazing, that has made a big difference.” Good communication systems were important so parents had a way to tell teachers when the morning did not go well before school and teachers could monitor accordingly. Likewise, when teachers communicated with parents about concerns early or when tests and assignments were coming up, parents said they could support their children academically better at home.

Special attention needed to be given to briefing relief or substitute teachers and up skilling the following year’s teacher so they were adequately prepared. One daughter became very anxious when she did not know which teacher would be hers the following year, and her school prohibited students from knowing beforehand. Eventually, the child’s anxiety rose to such a level her mother withdrew her. Letting children know about their next teacher allowed for smoother transitions.

Instructions and expectations that were stated in a brief and concise manner were more likely to be understood and followed. One mother put it this way: “Less is best kind of thing, really direct, not too many words.” A few parents mentioned if explanations for tasks had a short rationale, then their children

more readily complied; they could understand the logic for the assignment. Reinforcing with visual sequencing helped as well.

## **Discussion**

The initial analysis showed parents appraising their children's difficulties at school as a major stressor for their families. Parents experienced distress when their children were bullied at school, in addition to coping with their children's anxiety and depression. Their children's social difficulties were identified as contributing factors and needed support to develop. The gap between their child's intelligence and actual work output was concerning for them, and written tasks were an ongoing obstacle in this regard, as well as the lack of targeted learning support for breaking down instruction and organizing assignments. Transition times were pinpointed as problematic.

The emerging themes are comparable with the findings from Lasser and Corley's (2008) qualitative study on parenting children with AS, for example, child-environment mismatch, building on strengths, and a need for support. Accommodations and strategies sensitive to the child's needs and developmental levels are necessary to manage the challenging aspects of AS and provide opportunities for learning. Parents had encountered a lack of awareness regarding Asperger syndrome in schools, and limited insight into their child's behavioral response to stress. It is vital to understand how a child with Asperger syndrome is affected at school so the necessary supports can be put into place, especially for social skill facilitation and during times of transition (Brewin, Renwick, & Fudge Schormans, 2008). Parents working as knowledgeable partners with school professionals, invested in seeing their children reach their full potential resound with issues in education regarding parent involvement (Bronfenbrenner, 1986; Comer & Haynes, 1991).

The parents in this study expressed a strong desire to be seen as partners with the school rather than troublemakers. They shared many stories of trying to communicate what they knew worked well for their children. Their coping skills and perspectives have increased over time (Gray, 2002), and they have accumulated a wealth of knowledge that could help children adapt and learn.

This study is a small sampling of participants from a specific locale. However, there are implications evolving for improved teacher training and professional development to address the needs of children with an autism spectrum disorder more effectively.

### **Conclusion**

“He’s always very bright and very capable, but all of the things around it seemed to have squashed his academic ability, there’s so much else to deal with that he hasn’t been able to flourish.” This parent’s perspective on school represents the central dilemma for the parents in this study, that is, their children were not able to successfully adapt to the school environment. There were no stories from parents in this study that described their children thriving at school.

All the parents believed that their children needed and would greatly benefit from academic, social and transitional support at school, however, it seemed as if this support only came as a result of constant requests and justification and many parents expressed frustration at being viewed as troublesome, neurotic or overly anxious. One mother explained “it’s like you’re a helicopter parent, it makes it very difficult to engage with the system, and it’s the system that has this effect on the child, on the Asperger’s child.” Further exploration of the optimal learning environment for a child with Asperger syndrome is warranted.

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**Research** : The Awareness of Buddhist Beliefs Regarding Merit and Sin of  
LoeiRajabhatUniversity Students

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### ABSTRACT

The purposes of this research were aimed 1) to study the level of the awareness of Buddhist Belief Regarding Merit and Sin Of LoeiRajabhat University students 2) to compare the awareness of Buddhist Belief Regarding Merit and Sin Of LoeiRajabhat University students, classified by their gender, faculty and grade level. This research is a survey research; Samples were 379 undergraduate students semester 2, 2553 of LoeiRajabhat University which used Multi-Sampling. The research instrument was rating scale. All reliabilities were .95 the statistics in this research were used by percentage, means, standard deviation and t-test, and One way anova, in case of found the difference test by using scheffe.

#### The findings were as follows:

1. LoeiRajabhat University undergraduate students, both males and females have the awareness of Buddhist Belief Regarding Merit which is no different. Males have belief more than female.

2. LoeiRajabhat University undergraduate students, different faculty have belief regarding merit which is different. When we considered, is found that giving is different and precept is also different too.

3. LoeiRajabhat University undergraduate students, different grades have belief regarding merit which is different. When we considered, is found that precept and praying is different.

4. Rajabhat University undergraduate students, different faculty have belief regarding merit which is no different.

5. LoeiRajabhat University undergraduate students, different grades have belief regarding merit which is no different.

**Keyword(s):** Buddhist Beliefs, Merit and Sin, Buddhism.

## 1. Significance of the study

The word “merit” is one of the cores of Buddhism. The definition of “merit” is a good trail for a behavior like physical, speech and mind, also referred to as “wholesome”. According to the text “Punna” is called “rising” which means the symptoms of spiritual rise. It turns out to be a joyous rapture. This joyous rapture as a symptom of mental well known as “Happiness”. By the reason of the Buddha is said to a group of priests that “Merit is a name of happiness”. A state of mind as opposed to the merits of this condition is sin. It is a wretched miserable condition called “suffering”. The condition that mention to merit must be within the spirit of the wholesome. It is a mercy and wisdom. This recognizes that a charity will dress up and cook a gorgeous body, speech and mind. Buddha compared a person who has the mind as it is a wholesome like a flower mechanic to pick out a different colored flowers arranged together into a beautiful garland. The spiritual and charitable deeds would be both physically and mentally as a person verbally spectacular. These are the deeds and charitable causes; a factor of each other apart is not. Thai people called “to do merit, to do wholesome”. In Buddhism is the several doctrines to ignore sin and to do merit for creating live together in peace in this world and the supplies in the next world, such as the three admonitions, wholesome course of action, base of meritorious action etc... (กาญจนา จิตต์วัฒน์ และศยาม ราชวัตร.2550:1)

Thailand society has believed in Buddhism for a long time. Lifestyle allies to Buddhism. Especially believe in merit which considered being a major lifestyle and activities of Thailand always relate to Buddhism, mention about merit of the action until become a ritual. We can stay that from birth to death is associated with philanthropy, like shaved hair, name, marriage, ordination, new home, anniversary of age, funeral. All these have ritual of merit for the pass to the charity's own life and family. The merit is holding a belief ingrained in the lives of Thailand together with confidence that Philanthropy to benefit both in this world and the next. A person who makes a merit will go to the heaven as opposed to a person who makes a sin will go to hell. Each man gets what he deserves. Thai people who a deeply religious will adhere to this motto and always conduct themselves in accordance with such beliefs.

When Thailand passes globalization on society, it will become multiculturalism. Thailand is not only the trend of the social and religious beliefs only, but there are many beliefs occur.

Especially the trend of modern science with the empiricism reasons to believe that the truth must be something that can be proven to be. Thailand is a Buddhist youth society currently is in the trend a wide variety of concepts and practices will continue to be a good Buddhist or not. Particularly belief in merit and sin which is valuable that in the past has upheld by Thailand Buddhist heritage.

Researcher is interested to study that students in Thailand have been changed from the agriculture to industry age and forward to the information age across the whole world. Then Thai society remains belief in merit and sin or not. How is it now? This study seeks to delve into the teen youth group Buddhist in Thailand. In This research, the researcher has chosen to represent a sample of young adolescents. Set out by undergraduate students which are representatives to study the merit and sin in Thailand as mentioned above.

## **2. Purpose of the Study**

1. To study of the level of belief in merit and sin in Buddhism of Undergraduate students at LoeiRajabhat University.
2. To compare of belief in merit and sin in Buddhism of Undergraduate students at LoeiRajabhat University, classified by sex, faculty and class.

## **3. Benefit of Study**

1. To know the doctrine of merit and sin in Buddhism as a source of social belief in Thailand nowadays.
2. To know the doctrine of merit and sin in a group of undergraduate students, classified by sex, faculty and class at LoeiRajabhat University. And it can be the information to improve learning and teaching about merit and sin more appropriately.
3. To be guideline for student affairs division at LoeiRajabhat University to provide student ethics activities.

## **4. Research Methodology**

The study of this research that belief in merit and sin in Buddhism of undergraduate students at LoeiRajabhat University. The researcher has preceded the following steps.

1. Populations and sampling

1.1 Populations were undergraduate students at semester 2 of the academic year in 2010 of LoeiRajabhat University, 7,178 persons.

2.1 The sampling was undergraduate students at semester 2 of the academic year in 2010 of LoeiRajabhat University, 379 persons, obtained by using multi-stage sampling.

Number of sampling was calculated from Taro Yamane amount 379 persons as follows

$$\text{Formula } n = \frac{N}{1 + N(e^2)}$$

When  $n$  = sampling of research

$N$  = populations

$e$  = error

Represent

$$n = \frac{7,178}{1 + \left(7,178 \times .05^2\right)} = 379$$

When get the number of sampling then take the sampling compare to the proportion of the population, gender, faculty and grade level, as the number of population and sampling are shown in table 1-2

Table 1 shown population of the research

Class	First year			Second Year			Third Year			Fourth Year			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Sex															
Faculty															
Education	28	70	98	24	62	87	10	32	43		17	23	68	183	252
Science and Technology	4	5	9	3	9	2	8	4	2	54	7	1	9	5	4
Humanities and Social Sciences	25	61	86	13	33	47		21	30		16	20	51	134	185
	0	9	9	8	7	5	91	8	9	34	6	0	3	0	3
	26	40	66	14	16	30		11	20		11	18	56	790	135
	2	0	2	0	7	7	90	0	0	71	3	4	3		3

Industrial Technology	20 0	7 7	20 7	16 8	10 8	17 8	49	10	59	31	2	33	44 8	29	477
Managemen t	67	7	45 4	42	25 8	30 0	42	7	13 9	17	8	30	38	15 9	812 971
<b>Total</b>	<b>106</b>	<b>211</b>	<b>318</b>	<b>731</b>	<b>140</b>	<b>213</b>	<b>380</b>	<b>799</b>	<b>117</b>	<b>198</b>	<b>488</b>	<b>686</b>	<b>237</b>	<b>480</b>	<b>717</b>

Table 2 shown population of the research

Class Sex Faculty	First year			Second Year			Third Year			Fourth Year			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Education	15	37	52	13	33	46	6	17	23	3	9	12	37	96	133
Science and Technology	13	33	46	7	18	25	5	11	16	2	9	11	27	71	98
Humanities and Social Sciences	14	21	35	7	9	16	5	6	11	4	5	9	30	41	71
Industrial Technology	11	0	11	9	1	10	3	0	3	2	0	2	25	1	26
Managemen t	4	20	24	2	14	16	2	7	9	0	2	2	8	43	51
<b>Total</b>	<b>57</b>	<b>111</b>	<b>168</b>	<b>38</b>	<b>75</b>	<b>113</b>	<b>21</b>	<b>41</b>	<b>62</b>	<b>11</b>	<b>25</b>	<b>36</b>	<b>77</b>	<b>252</b>	<b>329</b>

2. Forms of research is research survey

3. Tools of this research was a questionnaire of the Awareness of Buddhist Beliefs

Regarding Merit and Sin of LoeiRajabhat University Students. This was created by using a Likert scale which is rating scale of 5 levels are absolutely belief no doubt, belief but doubt, Not sure, no belief but not sure, absolutely not belief. This adapted from PhramahaSinsamutraPhonkhan amount 85 items by classification is as follows.

1. Belief in merit and sin amount 50 items is charity 25 items, precept 10 items and development 15items.

2. Belief in merit and sin amount 35items is body false 15 items, speech false 11itemsand mind false 9 items.

#### 4. Process of creating the tools

The researcher conducted a questionnaire about the Awareness of Buddhist Beliefs Regarding Merit and Sin of LoeiRajabhat University Students as follows

4.1 Study the concepts, principles, theories and research related to the creating the questionnaire and beliefs about merit and sin in Buddhism.

4.2 Create a questionnaire about belief in merit and sin in Buddhism of rating scale was divided into three parts.

Part 1:Personal Profile of respondents

Part 2: Belief in merit in Buddhism

Part 3 :Belief in sin in Buddhism

Evaluation criteria of the level are 5 in 2-3 of questionnaire as follows.

5represent Absolutely belief no in doubt

4representBelief but in doubt

3representNot sure

2representNo belief but not sure

1representAbsolutely not belief

4.3 Take questionnaire to prove construct validity by specialist. The specialists are as follows

1. Asst. BoonyawatBoonthawong, Lecturer department of Social Development, faculty of Humanities and Social Sciences, LoeiRajabhat University.

2. Dr. KanlayaYodkhamlue, Lecturer department of Public Administration, faculty of Humanities and Social Sciences, LoeiRajabhat University.

3. Dr. SuraphonPhromkul, Lecturer department of Political Science, faculty of Humanities and Social Sciences, Mahamakut Buddhist University, Chumpae campus.

4.4 The questionnaire was revised according to the recommendations of experts. Questions in the questionnaires are all the IOC 1.00.

4.5 Take the questionnaire about the Awareness of Buddhist Beliefs Regarding Merit and Sin of LoeiRajabhat University Students to use with students in each grade level (Grade 1-4) of the two persons (5 faculties, each grade level 10 persons) semester 2 of 2010 at LoeiRajabhat University in total 40 persons which is not a sampling group then take data was analyzed for the discrimination. By finding item total correlation ranged from 0.21 to 0.65 and take to analyze of the reliability of all questionnaires were .95 by using  $\alpha$  – Coefficient

4.6 publish to set of questionnaires about the Awareness of Buddhist Beliefs Regarding Merit and Sin of LoeiRajabhat University Students to use the sampling group in order to further research.

## 5. Data collection

This research was collected data manually

5.1 Present proposal of research and questionnaire about the Awareness of Buddhist Beliefs Regarding Merit and Sin of LoeiRajabhat University Students to rector of a university for approval to proceed.

5.2 The researcher explained the purpose of the research to sampling group.

5.3 The researcher took questionnaire about the Awareness of Buddhist Beliefs Regarding Merit and Sin of LoeiRajabhat University Students to the sampling group were student 1-4 years of 5 faculties, semester 2, 2010 of LoeiRajabhat University amount 379 persons to answer questionnaire.

5.4 The researcher collected data from questionnaire about the Awareness of Buddhist Beliefs Regarding Merit and Sin of LoeiRajabhat University Students.

5.5 Took questionnaire to examine the accuracy and completeness together with supplied coding and check the code by the researcher.

5.6 Took data from the answer of questionnaire of sampling group to analyze by using social science program.

## 6. Analysis

6.1 The researcher was conducted as follows.

Part 1 : analysis personal profile of respondents by using percentages.

Part 2 : analysis about the Awareness of Buddhist Beliefs Regarding Merit and Sin of LoeiRajabhat University Students. holistic approach and individual aspect by using the mean and standard deviation (SD), classify by variable.

2.1 The Awareness of Buddhist Beliefs Regarding Merit and Sin of LoeiRajabhat University Students.

2.2 The Awareness of Buddhist Beliefs Regarding Merit of LoeiRajabhat University Students.

1. Overall image

2. Giving

3. Precept

4. Development

2.3 The Awareness of Buddhist Beliefs Regarding Sin of LoeiRajabhat University Students.

1. Overall image

2. Body false

3. Speech false

4. Mind false

2.4 Classified by sex.

1. Belief in merit and sin

2. Belief in merit

3. Belief in sin

2.5 Classified by faculties.

1. Belief in merit and sin

2. Belief in merit

3. Belief in sin

2.6 Classified by grade level.

1. Belief in merit and sin

2. Belief in merit

3. Belief in sin

Part 3 : Comparison of the Awareness of Buddhist Beliefs Regarding Sin of LoeiRajabhat University Students, classified by sex, faculties and grade level, holistic approach of people and individual aspect by using One-way Anova, when results were statistically significance. Test by Scheffe's method.

7. The statistics used in data analysis

1. The statistics are used to check the quality of questionnaire as follows.

1.1 Test the quality of questionnaire by experts (IOC)  
(SomnuekPhatthiyathanee, 2001: 219-221)

1.2 To find discrimination of questionnaire by correlation analysis between item-total correlations (BoonchomSrisaard, 2003 : 81)

1.3 To find reliability of the questionnaire by using  $\alpha$  - Coefficient of Cronbach (Luan Saiyod and AngkhanaSaiyod, 1997 :107-108)

2. Basic statistics were used to analyze the data

2.1 Percentage

2.2 Mean

2.3 Standard Deviation

3. The statistics used to compare the Awareness of Buddhist Beliefs Regarding Sin of LoeiRajabhat University Students, classified by sex, faculties and grade level, holistic approach

and individual aspect by using One-way Analysis of Variance, when results were statistically significance. Test by Scheffe's method.

## 5. Result of research

1. Detail of respondents from the number of sampling 379 persons, the researcher collected the questionnaire returned, and then selects the complete questionnaire for using data analysis. The questionnaires were 379 sets of 100 percentages. Most of them were female, percentages were 65.20, study in faculty of education 32.25 percentages and first year were 43.46 percentages.

2. Analysis the Awareness of Buddhist Beliefs Regarding Sin of LoeiRajabhat University Students.

2.1 Undergraduate students of LoeiRajabhat University have belief in merit and sin by holistic approach have belief in the level of belief but in doubt equal ( $\bar{x}=4.01$ ) when considered separately as each topic is found that students have belief about merit in the level of belief but in doubt equal ( $\bar{x}=4.02$ ) when considered individual aspect is found that students have belief in the level of belief but in doubt every side by ascending order of the mean from high to low that were development equal ( $\bar{x}=4.20$ ), giving equal ( $\bar{x}=3.94$ ) and precept equal ( $\bar{x}=3.94$ ). Students have belief in sin of the level of belief but in doubt equal ( $\bar{x}=3.98$ ) when considered every side is found that students have belief but in doubt every side by ascending order the mean from high to low that were speech false, body false and mind false which was the mean of 4.01, 3.99 and 3.95 respectively.

2.2 Undergraduate students of LoeiRajabhat University, male and female have belief in merit and sin, holistic approach was belief but in doubt. It is believed by males than females equal ( $\bar{x} = 4.04 > \bar{x} = 3.99$ )

When considered separately as each topic is found that belief in sin, males believed more than females ( $\bar{x} = 4.05 > \bar{x} = 4.01$ ) which is the level of belief but in doubt too. When considered separately as individual aspect is found that males believed the level of belief but in doubt every side by ascending order the mean from high to low were development, precept and giving which was the mean equal 4.19, 4.01 and 3.98 respectively. But females believed the level

of belief but in doubt every side by ascending order the mean from high to low were development, giving and precept which was the mean equal 4.21, 3.92 and 3.91 respectively.

The belief in sin, it is believed by males than females ( $\bar{x} = 4.03 > \bar{x} = 3.96$ ) which was the level of belief but in doubt too. When considered separately as individual aspect is found that males believed the level of belief but in doubt every side by ascending order the mean from high to low were speech false, body false and mind false which was the mean equal 4.07, 4.01 and 4.00 respectively. But females believed of the level of belief in doubt every side by ascending order the mean from high to low were speech false, body false and mind false which was the mean equal 3.98, 3.97 and 3.92 respectively.

2.3 Undergraduate students of LoeiRajabhat University, classified by faculty have belief in merit and sin of the level of belief in doubt every faculties by ascending order the mean from high to low were faculty of management, faculty of industrial technology, faculty of education, faculty of humanities and social sciences and faculty of science and technology which was the mean equal 4.11, 4.09, 4.06, 3.97 and 3.89 respectively.

When considered separately as each topic is found that belief in merit. All Students of faculty have belief the level of belief but in doubt by ascending order the mean from high to low were faculty of management, faculty of education, faculty of industrial technology, faculty of humanities and social sciences and faculty of science and technology which was the mean equal 4.14, 4.11, 4.11, 3.97 and 3.86 respectively. When considered separately of faculties of each side is found that 1) Students of faculty of education have belief in the level of belief but in doubt every side by ascending order the mean from high to low were development, precept and giving which was the mean equal 4.26, 4.05 and 4.04 respectively. 2) Students of faculty of science and technology have belief in the level of belief but in doubt every side by ascending order the mean from high to low were development, precept and giving which was the mean equal 4.06, 3.78 and 3.77 respectively. 3) Students of faculty of humanities and social sciences have belief in the level of belief but in doubt every side by ascending order the mean from high to low were development, precept and giving which was the mean equal 4.22, 3.88 and 3.86 respectively. 4) Students of faculty of industrial technology have belief in the level of belief but in doubt every side

by ascending order the mean from high to low were development, giving and precept which was the mean equal 4.27,4.05 and 4.04 respective. 5) Students of faculty of management have belief in the level of belief but in doubt every side by ascending order the mean from high to low were development, giving and precept which was the mean equal 4.25, 4.11 and 4.04 respectively.

But belief in sin, all Students of faculty have belief the level of belief but in doubt by ascending order the mean from high to low were faculty of management, faculty of industrial technology, faculty of education, faculty of humanities and social sciences and faculty of science and technology which was the mean equal 4.08, 4.06, 3.98, 3.97 and 3.93 respectively. When considered separately of faculties of each side is found that 1) Students of faculty of education have belief in the level of belief but in doubt every side by ascending order the mean from high to low were body false, speech false and mind false which was the mean equal 4.02, 4.01 and 3.89 respectively. 2) Students of faculty of science and technology have belief in the level of belief but in doubt every side by ascending order the mean from high to low were body false, speech false and mind false which was the mean equal 3.95, 3.93 and 3.88 respectively. 3) Students of faculty of humanities and social sciences have belief in the level of belief but in doubt every side by ascending order the mean from high to low were speech false, mind false and body false which was the mean equal 3.98, 3.98 and 3.96 respectively. 4) Students of faculty of industrial technology have belief in the level of belief but in doubt every side by ascending order the mean from high to low were speech false, mind false and body false which was the mean equal 4.12, 4.10 and 3.98 respectively. 5) Students of faculty of management have belief in the level of belief but in doubt every side by ascending order the mean from high to low were speech false, mind false and body false which was the mean equal 4.16, 4.09 and 4.01 respectively.

2.4 Undergraduate students of LoeiRajabhat University, classified by grade of level have belief in merit and sin of the level of belief in doubt every level by ascending order the mean from high to low were second year, fourth year, first year and third year which was the mean equal 4.07, 3.99, 3.98 and 3.95 respectively.

When considered separately as each topic is found that belief in merit. All Students of grade level have belief the level of belief but in doubt by ascending order the mean from high to

low second year, third year first year and fourth year which was the mean equal 4.14, 4.00, 3.97 and 3.93 respectively. When considered separately of grade level is found that 1) Students of first year have belief in the level of belief but in doubt every side by ascending order the mean from high to low were development, giving and precept which was the mean equal 4.12, 3.90 and 3.89 respectively. 2) Students of second year have belief in the level of belief but in doubt every side by ascending order the mean from high to low were development, precept and giving which was the mean equal 4.33, 4.09 and 4.04 respectively. 3) Students of third year have belief in the level of belief but in doubt every side by ascending order the mean from high to low were development, giving and precept which was the mean equal 4.19, 3.93 and 3.91 respectively. 4) Students of fourth have belief in the level of belief but in doubt every side by ascending order the mean from high to low were development, giving and precept which was the mean equal 4.20, 3.84 and 3.75 respective.

But belief in sin, all Students of grade level have belief the level of belief but in doubt by ascending order the mean from high to low fourth year, first year, second year and third year which was the mean equal 4.08, 4.01, 3.97 and 3.87 respectively. When considered separately of grade level is found that 1) Students of first year have belief in the level of belief but in doubt every side by ascending order the mean from high to low were mind false, speech false and body false which was the mean equal 4.04, 4.03 and 3.98 respectively. 2) Students of second year have belief in the level of belief but in doubt every side by ascending order the mean from high to low were body false, speech false and mind false which was the mean equal 4.04, 3.99 and 3.84 respectively. 3) Students of third year have belief in the level of belief but in doubt every side by ascending order the mean from high to low were speech false, body false and mind false which was the mean equal 3.92, 3.86 and 3.82 respectively. 4) Students of fourth have belief in the level of belief but in doubt every side by ascending order the mean from high to low were speech false, body false and mind false which was the mean equal 4.15, 4.05 and 4.04 respective.

3. Comparison of the Awareness of Buddhist Beliefs Regarding Merit and Sin of LoeiRajabhat University Students

### 3.1 Belief in merit and sin of holistic approach

3.1.1 Undergraduate students of LoeiRajabhat University, male and female have belief in merit and sin in Buddhism, holistic approach was not different. Undergraduate students of LoeiRajabhat University study in different faculties have belief in merit and sin in Buddhism, holistic approach was not different. Undergraduate students of LoeiRajabhat University study different grade level have belief in merit and sin in Buddhism, holistic approach was not different.

### 3.2 Belief in merit.

3.2.1 Undergraduate students of LoeiRajabhat University, male and female have belief in merit in Buddhism which was not different.

3.2.2 Undergraduate students of LoeiRajabhat University study in different faculties have belief in merit in Buddhism which was not different.

3.2.3 Undergraduate students of LoeiRajabhat University study in different grade level have belief in merit in Buddhism which was not different.

### 3.3 Belief in merit of giving.

3.3.1. Undergraduate students of LoeiRajabhat University, male and female have belief in merit of giving in Buddhism which was not different.

3.3.2. Undergraduate students of LoeiRajabhat University study in different faculties have belief in merit of giving in Buddhism which was different in statistically significance at the level of .05 when comparing the different result of the pair of mean is found that Undergraduate students of LoeiRajabhat University, faculty of education and faculty of science and technology, faculty of management and faculty of science and technology have belief in merit of giving in Buddhism which were different in statistically significance at the level of .05 and other were not different.

3.3.3 Undergraduate students of LoeiRajabhat University study in the different grade level have belief in merit of giving in Buddhism which was not different.

### 3.4 Belief in merit of precept.

3.4.1 Undergraduate students of LoeiRajabhat University, male and female have belief in merit of precept in Buddhism which was not different.

3.4.2 Undergraduate students of LoeiRajabhat University study in different faculties have belief in merit of precept in Buddhism which were different in statistically significance at the level of .05 when comparing the different result of the pair of mean is found that Undergraduate students of LoeiRajabhat University, faculty of education and faculty of science and technology have belief in merit of precept in Buddhism which were different in statistically significance at the level of .05 and other were not different.

3.4.3 Undergraduate students of LoeiRajabhat University study in the different grade level have belief in merit of precept in Buddhism which was not different.

3.5 Belief in merit of development.

3.5.1 Undergraduate students of LoeiRajabhat University, male and female have belief in merit of development in Buddhism which was not different.

3.5.2 Undergraduate students of LoeiRajabhat University study in different faculties have belief in merit of development in Buddhism which was not different.

3.5.3 Undergraduate students of LoeiRajabhat University study in the different grade level have belief in merit of development in Buddhism which were different in statistically significance at the level of .05 when comparing the different result of the pair of mean is found that Undergraduate students of LoeiRajabhat University, second year and first year have belief in merit of development in Buddhism which were different in statistically significance at the level of .05 and other were not different.

3.6 Belief in sin.

3.6.1 Undergraduate students of LoeiRajabhat University, male and female have belief in sin in Buddhism which was not different.

3.6.2 Undergraduate students of LoeiRajabhat University study in different faculties have belief in sin in Buddhism which was not different.

3.6.3 Undergraduate students of LoeiRajabhat University study in the different grade level have belief in sin in Buddhism which was not different.

3.7 Belief in sin of body false.

3.7.1 Undergraduate students of LoeiRajabhat University, male and female have belief in sin of body false in Buddhism which was not different.

3.7.2 Undergraduate students of LoeiRajabhat University study in different faculties have belief in sin of body false in Buddhism which was not different.

3.7.3 Undergraduate students of LoeiRajabhat University study in the different grade level have belief in sin of body false in Buddhism which was not different.

### 3.8 Belief in sin of speech false

3.8.1 Undergraduate students of LoeiRajabhat University, male and female have belief in sin of speech false in Buddhism which was not different.

3.8.2 Undergraduate students of LoeiRajabhat University study in different faculties have belief in sin of speech false in Buddhism which was not different.

3.8.3 Undergraduate students of LoeiRajabhat University study in the different grade level have belief in sin of speech false in Buddhism which was not different.

### 3.9 Belief in sin of mind false.

3.9.1 Undergraduate students of LoeiRajabhat University, male and female have belief in sin of mind false in Buddhism which was not different.

3.9.2 Undergraduate students of LoeiRajabhat University study in different faculties have belief in sin of mind false in Buddhism which was not different.

3.9.3 Undergraduate students of LoeiRajabhat University study in the different grade level have belief in sin of mind false in Buddhism which was not different.

## 6. Discussion

The study of The Awareness of Buddhist Beliefs Regarding Merit and Sin of LoeiRajabhat University Students can be summarized as follows.

1. Undergraduate students of LoeiRajabhat University have belief in merit and sin, holistic approach was belief but in doubt. When considered separately as each topic is found that students have belief in merit which was the level of belief but in doubt, they believed in development ( $\bar{x} = 4.20$ ), giving ( $\bar{x} = 3.94$ ) and precept ( $\bar{x} = 3.94$ ) and students have belief in sin the level of belief but in doubt every side by ascending order the mean from high to low which believe

in speech false, body false and mind false respectively. This may be students are Buddhist. They are implanted in merit and sin in Buddhism since childhood from parents or senior relatives as well as receive training from various institutions, to make belief in merit and sin the level of belief but in doubt. This is consistent with the research of PhramahaSinsamutraPhonkhan (2001, abstract) that has done research in the topic of "Belief in merit-sin in Buddhism of high school education in Loei Province by multistage sampling from high school education, department of general education, 2000, a sampling of 405 persons. The result of the research found that the majority of students had belief in merit and sin in Buddhism which was the level of belief but in doubt. They believed in merit in precept, giving and development and believed in sin in mind false, speech false and body false which was the level of belief but in doubt.

However, Undergraduate students of LoeiRajabhat University have belief in merit and sin of the level of belief but in doubt by sort of the mean which arrange according to the most belief of first three as follows.

1. To help parents or senior relatives through take care of them and obey their teaching was extremely fortunate ( $\bar{x} = 4.55$ )

2. To provide the love, loving-kindness, non-violence or human rights abuser was a good thing and should be followed ( $\bar{x} = 4.41$ )

3. To ordain a Buddhist monk as spiritual beliefs was extremely wholesome and found a brightness, cleaning and truly purification ( $\bar{x} = 4.34$ )

4. A person who believes in merit-sin hell-heaven good-evil came into existence and lives of faith and was located in diligence so they could be happy in life ( $\bar{x} = 4.34$ )

For the belief of sin, Undergraduate students of LoeiRajabhat University have belief in sin of the level of belief but in doubt by sort of the mean which arrange according to the most belief of first three as follows.

1. Who kill parents, Buddhist saint or hurt Buddhist saint or instigate to division among Buddhist monk was a serious sin. They must be unhappy in this world and next ( $\bar{x} = 4.26$ )

2. To be trick woman into prostitution was a sin ( $\bar{x} = 4.18$ )

3. Speech false to damage others, to slander others or to talk to people outraged was a sin ( $\bar{x} = 4.17$ )

4. Broker fraud workers to work abroad was also a sin ( $\bar{x} = 4.17$ )

2. Comparison of beliefs in merit and sin in Buddhism of Undergraduate students of LoeiRajabhat University, classified by sex

Undergraduate students of LoeiRajabhat University, male and female have belief in merit of giving in Buddhism which was not different. This is not according to the hypothesis because the students are Buddhist. The belief of merit and sin has a way of living with the environment of Buddhist. When consider in merit is found that Undergraduate students of LoeiRajabhat University, male have belief of the level of belief in doubt every side by ascending order the mean from high to low were development, precept and giving respectively but female have belief in merit of the level of belief in doubt every side by ascending order the mean from high to low were development, giving and precept respectively. About sin is found that males have belief of the level of belief in doubt every side by ascending order the mean from high to low were speech false, body false and mind false respectively but females have belief of the level of belief in doubt every side by ascending order the mean from high to low were speech false, body false and mind false respectively. This is probably because as holistic approach or in merit and sin. Male and female were cultivate about Buddhism from family which is similar to the Buddhist society. So the knowledge, understanding and beliefs in sin are not different. This is consistent with the research of PhramahaSinsamutraPhonkhan (2001, abstract) that has done research in the topic of "Belief in merit-sin in Buddhism of high school education in Loei Province by multistage sampling from high school education, department of general education, 2000, a sampling of 405 persons. The result of the research found that male and female have belief in merit in Buddhism both holistic approach and every side is not different and believe in sin in Buddhism of holistic approach and speech false with mind false are not different. But male and female have belief in body false which is different in statistically significance at the level of .05 which is just only one that is inconsistent with the result of the research is found. Beside it is also consistent with the research of SiripornSiriwiwat (1983:151) that has done research "A comparative study of Buddhism beliefs in high school education, the

infiltration of communist terrorist's area, Ubonrajthani province. The sampling of 333 students in two schools, the result of the research is found that male and female have belief in Buddhism which is not different and is consistent with the research of Sompornchan-ud (2006: 86) that has done the research "Belief in merit and sin according to Buddhism of prison inmate, Mahasarakham province. She did with prison inmate of Mahasarakham province of population of 546 persons. The sampling was 450 persons. Males were 364 persons and females were 86 persons. The result of the research is found that prison inmate male and female had belief in merit and sin which was not different.

3. Comparison of beliefs in merit and sin in Buddhism of Undergraduate students of LoeiRajabhat University, classified by faculties.

Undergraduate students of LoeiRajabhat University study in different faculties have belief in merit in Buddhism which was not different. This is not according to the hypothesis because the students studied in the institute which classified in faculty in each of faculty are all featured on the life according to the basic moral precepts such as five precepts.

When consider in merit is found that Undergraduate students of LoeiRajabhat University study in different faculties. All faculties have belief in merit in Buddhism and in development in Buddhism were not different. But in giving in Buddhism were different in statistically significance at the level of .05 when test on the difference of the mean is found that Undergraduate students of LoeiRajabhat University, faculty of education and faculty of management have belief in merit of giving in Buddhism rather than Undergraduate students of LoeiRajabhat University, faculty of sciences and technology. In precept of Buddhism was different in statistically significance at the level of .05 when test on the difference of the mean is found that Undergraduate students of LoeiRajabhat University, faculty of education have belief in merit of precept in Buddhism rather than Undergraduate students of LoeiRajabhat University, faculty of sciences and technology. Because the quality of Undergraduate students of LoeiRajabhat University, faculty of sciences and technology are reasonable, could simply not believed, found the knowledge by themselves. This knowledge wisely is learned rationally not convinced because of any reason in 10 ways: 1) listening consecutive 2) held by tradition 3) rumor 4) by citing texts or scriptures 5) logic 6) implication 7)

bureaucracy as the reason 8) already studied with the theory 9) seen appearance as possible 10) respected as a teacher. These means were low and different from others.

But belief in sin, Undergraduate students of LoeiRajabhat University study in different faculties. All faculties have belief in merit in Buddhism of holistic approach and every side are body false, speech false and mind false which are not different. Because all students are cultivated according to the thought in sin since young from family and institute before.

4. Comparison of beliefs in merit and sin in Buddhism of Undergraduate students of LoeiRajabhat University, classified by grade level.

Undergraduate students of LoeiRajabhat University study in the different of grade level have belief in merit and sin in Buddhism was not different. This may be because the concept of merit and sin is a belief, faith which comes from mind. Not from the teaching or learning of the cultivation

When consider in merit is found that Undergraduate students of LoeiRajabhat University study in different of grade level have belief in merit in Buddhism and in giving in Buddhism and in precept in Buddhism were not different. But in development in Buddhism were different in statistically significance at the level of .05 when test on the difference of the mean is found that Undergraduate students of LoeiRajabhat University, second year have belief in merit of development in Buddhism rather than first year. Because this may be second year have an experience in training of mediation, development from the plan of LoeiRajabhat University rather than first year.

But belief in sin, Undergraduate students of LoeiRajabhat University study in different of grade level. All grade level have belief in merit in Buddhism of holistic approach and every side are body false, speech false and mind false which are not different. Because all students have an experience, they are cultivated which are not different from institution. Not only from family, has educational institution but the temple or Dhamma retreated.

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สังกัดสำนักงานเขตพื้นที่การศึกษานครราชสีมา เขต 2. วิทยานิพนธ์ครุศาสตรมหาบัณฑิต

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ในเขตกรุงเทพมหานคร. วิทยานิพนธ์พัฒนาชุมชนมหาบัณฑิต บัณฑิตวิทยาลัย มหาวิทยาลัยธรรมศาสตร์.

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STEAM Powered: The Arts Effect on Higher Education

Topic Area: Higher Education-Visual and Performing Arts  
Presentation Format: Paper Session

The Arts is a form of education that provides students with the ability to create meaningful imagery from the theoretical knowledge that is taught in a classroom setting. Today, with the primary focus being on Science, Technology, Engineering and Math (STEM), the Arts have become child's play rather than a critical part of the engaging learning component of education. This research is to present the importance of infusing the Arts into STEM as STEAM.

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## STEAM POWERED

### Abstract

This research examines the influence of infusing the arts into STEM-based curricula within a higher education institutional setting. Current undergraduate students will be the subjects of this study with three goals in mind. The first (1) will be to understand if students feel that the arts play a vital part within the higher education experience with both quantitative and qualitative approaches. The second goal (2) is to determine if the infusion of art into STEM studies enhances college fulfillment for students whose primary focus is in the sciences. The third and final goal (3) is to identify what role student affairs plays in the academic success and holistic experience of undergraduate students. Exploring these goals will assist educators as curriculum is developed for STEM programs. Developing the Arts component will also assist as a means to bring life and promote the learning experience from a more creative and engaging approach. It is the goal of this research to reveal the Arts' influence on undergraduate students' ability not to merely develop innovative technology, but also to create the innovative technology that captures the attention of a world market. The use of grounded theory as a methodology will present an inclusive understanding of undergraduate student perceptions of the function of the Arts in STEM fields. It is believed that this study will positively influence the matriculation of undergraduate students by exposing them to the creative aspects of the scientific world. This research will be conducted using a survey/questionnaire in which participants will record their perceptions of the importance of incorporating the Arts into their holistic experience as STEM undergraduate students.

# **SERVAIS PINCKAERS' VIRTUE ETHICS APPROACH: A BASIS FOR CONCEIVING AN ENVIRONMENTAL VIRTUE OF BEFRIENDING THE EARTH**

## **Abstract**

The study considered the holistic approach to virtue ethics of Servais Pinckaers as a more appropriate tool for possible articulation of relevant environmental concern. In pursuing the holistic stance of Servais Pinckaers, the study considered both an ethic of action, principle, and rule---one that provides guidance regarding what we ought and ought not to do to the environment; and an ethic of character and virtue---one that provides guidance on what attitudes and dispositions we ought and ought not to have regarding the environment.

To integrate the study into an environmental issue, this study proposed the virtue of befriending the earth as a relevant environmental virtue that offered a helpful framework, among others, for encouraging Christians to take seriously the issues of their friendly existence on earth where God as a Friend is profoundly present in all things. Given this vision, humans therefore could find their roles on earth not as dominators and passive spectators but as friendly partners with God in caring and sustaining the world's integrity, stability and beauty.

**Key words:** virtue, virtue ethics, friendship with God, befriending the earth

## **Introduction**

On January 28, 1998, the Catholic Bishops' Conference of the Philippines issued a pastoral letter entitled "What is Happening to Our Beautiful Land?" which outlined and suggested concrete responses for individual persons, churches, and government agencies to become involved in social action for the protection and care of our beautiful land (CBCP, 1998). In 2004, the CBCP also presented in a book entitled *Compendium of the Social Doctrine of the Church: Pontifical Council for Justice and Peace* where Chapter Ten gives intensive information and challenge that care for the environment is a matter of a common and universal duty. This call is accompanied by a growing sense of moral responsibility as well as an effective way to change mentality and lifestyle (CBCP, 2004). The bishops posed a challenge to theologians and academes to develop and formulate an environmental ethics responsive in protecting the integrity and justice, and safeguarding the environment.

With this challenge, Filipino Christians are now calling for a more urgent and sustainable articulation of Catholic environmental ethics. The researcher feels that this ethics must examine how human beings should and ought to relate in harmony with the environment (Palmer 1997). However, it seems that most of the solutions have been mainly focusing on the question of how one ought to act to address the environmental crisis. The concern is concentrated so much on "What sort of actions can be appropriately taken to respond on the ecological crisis in the country" (Peschke 1987). He observed that none of the majority of moral actions has addressed the question of what we should be as person in the midst of such crisis. The solutions have focused much on what we ought to do and yet the environmental destructions are becoming worse.

Moreover, Alasdair MacIntyre claims that there is “disintegration” occurred because ethicists depersonalized ethics. It is because the focus on contemporary ethics is so much confined on the ethics of action and not of character, virtue, or being. If action follows being (*agere sequitur esse*), where was being? Without the ethics of being, ethicists are left only to comment on isolated actions (Harriton & Keenan, 2002). As what is happening in doing ethics in the country, there is a narrowing of the focus because of its dominant action-based ethics. Most of the time, ethicists here are so much inclined on the decision making and problem solving and not on the formation and transformation of the moral agent. There is a big gap between the moral agent and the doing. Consequently, there is a lack of clarity and political will on the part of the agent who are subjects of passions, emotions, affections, faith convictions and principles, to respond to certain rules and laws. In concentrating so much on action based ethics, the program is there but no concomitant character that appreciates the issue. Thus, there is a need to reconnect the two in order to have a holistic ethics. What I mean is that, this study does not disregard the human actions being done by committed Filipino Christians such as action plans, policies decisions, and agenda to protect the environment, but to broaden the domain of moral response in covering more than how people should do and therefore to consider too the character traits it is good for the persons to have to address the environmental crisis. This approach actually is one of the oldest ways in doing ethics which is known as virtue ethics. The primary focus of this approach is on “what sort of person one should try to be. Thus, one of the aims of this approach is to offer an account of the sort of characteristics a virtuous person has” (Sandler 2007).

With such paradigm that is emerging in the environmental ethics, there is an urgent need to shift the focus not so much on the *actions* but on *ourselves* now. From this perspective,

therefore, this approach in doing ethics sees that threat that tends to abuse the environment is connected to the problem within the traits on character of the human community. What people are experiencing now comes mainly from the ethical question about what sort of people they ought to be in the midst of ecological crisis.

Sallie McFague has pointed out that this ongoing destruction of the earth, when perceived through the lens of moral theology, bears the mark of deep sinfulness (McFague 1993). It is through *injustice*, *greed*, and *self-interest*, human beings are violently bringing destruction to the species and ecosystems, which are meant to reflect the glory of God but instead end up destroyed. The said factors are considered vices (a bad habit, bad conduct, defect) of the human beings. These vices are definitely the main reasons for the depletion of non-renewable resources and the production of waste, and these bring about ecological imbalance.

*Injustice* is happening in the different communities as long as there is much hunger and suffering on the earth while individuals or small groups control and use more than their share. The present injustices are increasing between the haves and the have-nots, between the First and Third world countries. These scenarios are manifested not only in political, economic matters but also in terms of the substandard environmental conditions in which the poor are forced to live.

*Greed* on the earth is present due to the excessive consumption of the few elites, wealthy people both in the developed and developing countries. The greedy people are those who are accumulating and profiting most from controlling the resources of the earth while the poor are left hungry and deprived of material goods. These people are justifying their status quo in arguing that the problem is being exaggerated. They use a number of arguments that human

beings have the right to exploit the earth, and the earth has probably more resources than we realize, and that human ingenuity will find a way to deal with the problem. Hence for them, it is legitimate to exploit and use the earth excessively for their personal enjoyment and satisfaction.

Whereas *self-interest* is visible in the ecological community because of the wrong attitude towards subordination, (Warren 1995) wherein human beings dominate over nature and therefore have rights to manipulate it for their own advantage. Even the classical moralists are often too anthropocentric in their approach. They are also concerned, and cared about persons but often they do not reach out beyond their comfort zones. They might condemn the growing violence and injustices in the community, and yet they show little awareness or concern about the violence being done daily to the ecosystems upon which human life depends. Self-interest always prevails when people care only of their comfort, convenience, and pleasure but unaware and passive of the environmental price paid for such personal advantages. Even the list of sins did not include polluting rivers, wasting natural resources especially those non-renewable, and the destruction of living things most especially those that are going extinct other than humans. Only contemporary moralists begin to be alarmed and realized our serious moral responsibility to care for the earth and its resources (Hill 1998). With this line of thinking, the researcher will definitely use and analyze these contemporary moral insights in the process of developing an active role of human persons in the area of ecology.

Some women theologians, on the other hand, pointed out that the abuse of the earth is connected with *self-interest* of some men over women. They insist that the sort of logic of domination used to justify the domination of humans by gender, racial, or class status is also used to justify the domination of nature (Adams 1993). Eliminating a logic of domination is part of an ecofeminist critique. It is indicative of our manner as moral beings to treat women fairly.

Consequently, if *self-interest* of people prevails then ecological disaster is highly possible too. For the reason that the same treatment is manifested to the earth, for the earth symbolizes women.

With vices mentioned above, the researcher wants to consider the virtue ethics approach of Servais Pinckaers in order to develop an environmental ethics that involves a consideration what types of characters or attitudes one could develop and about the people one could become in the midst of ecological crisis in the country. In other words, what disposition must one have to live a good human life in relation to the natural world. The researcher considers Pinckaers' ethics because he is more fascinated in the virtue-oriented approach which dominates Thomas Aquinas' work, where the pursuit of the good, happiness and excellence prevail. With his moral stance, Pinckaers' works become an important source for the revival of interest in virtue-oriented moral theology in recent years.

## **Methodology**

This study is descriptive and explanatory in nature. It only seeks to describe and obtain explanation of the virtue ethics approach of Pinckaers in relation to environmental concern. To arrive at some concrete ideas concerning Servais Pinckaers' virtue ethics approach and its implication to environmental concern, the following basic methodology is employed.

1. The researcher focused on the major books of Pinckaers in the area of moral theology, namely, *The Desire for Happiness* (1998), *Sources of Christian Ethics* (1995), *Morality: The Catholic View* (2001). These books are characterized by a return to the importance of the virtues and offer a constructive Thomistic moral theology. They also bring the treasures of the past into

the present by using the importance of Scripture, the Fathers of the church, and the great medieval masters of the theological enterprises as Pinckaers' primary sources in doing moral theology. The researcher chose these books because they contain the most extended explanation of Pinckaers' virtue ethics approach.

2. He highlighted the important concepts in the works of Pinckaers. (Data collection)

3. He tried to summarize Pinckaers' concepts and identify the fundamental approach in his theology.

4. He consulted secondary sources related to Pinckaers to gain deeper understanding of his concepts and counter check the initial description developed by the researcher.

5. He developed an integrated ethics based on Pinckaers' concepts in relation to environmental concerns.

## **Discussion of the Study**

This study discusses the approach used by Servais Pinckaers in developing his virtue ethics in relation to environmental concerns.

### **A. Pinckaers' Holistic Approach to Virtue Ethics**

Pinckaers's approach is holistic in the sense that he disapproved of the moral systems which are much constraints of the ethics of obligations. Pinckaers, in his book entitled *The Sources of Christian Ethics*, briefly reviews the advent of the moral theory of obligation. He writes that the rise of nominalism (Ockham 2007), with William Ockham in the 14<sup>th</sup> century, initiates the moral theory of obligation (Pinckaers 1995).

With his nominalist views, Pinckaers notes that Ockham rejects the universal essence of reality. Ockham believes that "only individual realities exist. They are unique in their singular

existence. Universals are simply convenient labels having no reality in themselves but nominal value (Pinckaers 1995).” As regards moral aspects, everything is confined to individual decision of the free will. This kind of freedom proposes that individuals are free in spite of their natural inclinations to happiness and goodness. This “freedom of indifference” as coined by Pinckaers, affirms the inclination to happiness existing within one’s self. However, for Ockham, as for Aristotle and Aquinas, one can choose the means to achieve ultimate happiness. But in addition, for Ockham, unlike Aristotle and Aquinas, one can choose whether to will that ultimate happiness. According to Ockham, the natural orientation and tendency toward that happiness is built in: One could not do anything about that. Still, one can choose whether or not to act in order to achieve that happiness. Man is entirely free to choose it or not.

Pinckaers sees this moral system which is based on obligations as a problem to be overcome and he suggests that there is a need to address such feature of doing ethics which became the domain of obligations and legal imperatives as the effect of nominalism. Though the concept of obligation is obviously important one in moral theory as Pinckaers said, “it would be unthinkable to attempt the construction of any kind of moral system emptied of obligations and duties (Pinckaers 1995).” There must be some elements of rules and obligations to have an adequate moral system. However, the problem Pinckaers wanted to emphasize here is that the idea of obligation is not central and basic at the very heart of Catholic morality. The problem lies on the predominant and excessive emphasis on obligation that most of the time could overlook what lies beyond and above obligation. For instance, this concept of morality that focuses excessively on obligation could overlook “the life-giving principles of the Gospel such as the power of love to animate all of a Christian’s actions (Pinckaers 1995).” What Pinckaers is trying to convey here is that there is something far beyond mere obligation. Great Christians and

saints were able to live a holy life driven by a certain spiritual impulse not just out of obligations (Pinckaers 1995).

With this background, what is needed, according to Pinckaers, is to eliminate the harmful effects of nominalism and to re-emphasize the patristic and Thomistic understanding of the natural inclinations of the individuals. There is a need to appreciate again that human beings, by nature, are endowed with a basic set of constructive inclinations or impulses which incline them to certain goods. Such natural inclinations serve as the foundation for individuals' rights and obligations.

With regard to moral theology, the study of St. Thomas's teachings particularly of using the texts of the *Summa Theologiae* regarding happiness and virtues is important for Pinckaers for he is able to escape the categories of the manuals that have become tied to the ethics of obligations. He is also able to recognize the narrowness of the systematization of theology introduced by the casuists of the seventeenth century. He is also able to compare the two perspectives in fundamental moral theology:

the manuals exclude the treatises on happiness, the virtues, the gifts, the New Law, and grace – reducing the moral part of theology to four treatises: the treatise on human acts (considered a cases of conscience); the treatise on law (based on natural law); a treatise on conscience (replacing the virtue of prudence), and the treatise on sin (constructed in view of the sacrament of penance and taking the place of the virtues) (Pinckaers 1999: 914).

It shows that the perspective of the manuals reduces moral theology entirely to the domain of legal obligations and rules. Pinckaers recognizes that the theology of St. Thomas and that of the manuals constitute two different moral systems, both of which have their own inner logic. That is why to renew moral theology from the domain of obligations, Pinckaers returned to St. Thomas who represents the best of the tradition nourished by the Scripture and the Fathers

of the Church (Pinckaers 1999). The operative paradigm of Pinckaers is essentially Thomistic and the history of the development of moral theology through the Middle Ages is valuable to him. However, Pinckaers does not neglect the recent contributions of positive sciences such as anthropology, psychology, sociology and philosophy in the process of doing ethics. He noted that,

Moral theory, in turn, needs the positivist sciences. They promote a better understanding of the many social, psychological, historical, and cultural factors involved in any concrete action. These must be taken into consideration as far as possible if an adequate moral judgement is to be formed... In spite of their differing viewpoints, therefore, moral theory and the positivist sciences can complement each other in fruitful collaboration. (Pinckaers 1995: 73)

Following this holistic approach of Pinckaers in doing ethics, the next section specifically retrieves the prime place of the virtue of charity in the classical Christian morality.

#### Pinckaers' Virtue of Friendship with God in relation to Environmental Concern

Pinckaers retrieves several themes in ancient and medieval moral thoughts that have disappeared from the modern ethics because of the latter's emphasis on the concept of obligation and duty. First, there is the theme of beatitude or deeper happiness. Happiness then is considered the highest human good toward which human activity is aimed. The question of life's meaning and goal is consistent essentially with the question of happiness. Philosophy and then theology defined happiness as man's final end and highest good. Happiness is the final object of all human actions. It is the final end that motivates mankind and gives them meaning, value and wholeness. The quest for happiness or the good life is the principal concern of morality before. Pinckaers cites examples:

Aristotle devotes the first and last books of his *Nicomachean Ethics* to the study of happiness. St. Augustine, countering Manichean heresy, did not hesitate for an instant about the reasonableness of his opening thesis: “Everyone wants to be happy. There is no one who will not agree with me on this almost before the words are out of my mouth.”...St Augustine in three words answered the difficult question about what we should ask of God: “*Ora beatam vitam*” – “Ask for the happy life” (Pinckaers 1995: 73).

St. Thomas also gives priority to the question of happiness in his treatise on beatitude. He actually accepts the teleological character of Aristotle’s philosophy, that is, human beings always act freely for an end which they perceive to be good. Moreover, their final good which brings them happiness lies in the contemplation of truth and in living virtuously.

There is also the theme of friendship which Aristotle introduced as “absolutely indispensable. Even though possessed of every other good thing, without friends a person would have no desire to live (Aristotle 1986)”. The concept of harmonious relationship in the concept of friendship is a prerequisite to be personally happy. Even in the political sphere, friendship is a prominent theme among the Greeks. In fact, according to Aristotle, “the whole point of law and the political life, over and above justice, was to provide for friendship among citizens (Pinckaers 1995).” This theme of friendship “reached its climax in St. Thomas who defined charity as friendship with God and described the work of the Holy Spirit in the world as a work of friendship (Aquinas 1947).”

Pinckaers sees that such theme has completely disappeared from modern morality because friendship could hardly be considered an obligation. He argues that “friendship can create obligations, but the inverse is not true (Pinckaers 1995).” Friendship is a natural inclination that human is inclined to unite with one another in love. This inclination can be demonstrated and be found in its first realization in family affection, and eventually extended to

others. This inclination comes naturally to us because of our spiritual nature for communion. It is a distinct aspect of human nature since we are social beings. The inclination to befriend others is strengthened and developed by the virtues, particularly benevolence. As David Hume reiterates that benevolence is natural sentiment which is not acquired through education but exists in everyone. Benevolence is the virtue proper to friendship. It is shown when one wills what is good and actively works, supports and seeks the good for the sake of everyone.

Pinckaers views friendship as not only important for moral happiness but also as part of what makes life worth living. Therefore, even though an ethics of obligation discounts friendship as a moral issue, Pinckaers testifies that it is a vital ingredient of a good and happy life.

Servais Pinckaers also maintains that human as spiritual being has a natural inclination or gift to love God and others in pursuit of happiness. He writes that,

if a person is capable of true, unselfish love for God and neighbor – the love of friendship of which St. Thomas speaks – then the desire for happiness can lead that person to be open to God and neighbor and to become generous. Can we love others truly without wanting their happiness? In the same sense, St. Thomas, in defining charity as friendship, sees a sharing in God's beatitude as charity's foundation (Pinckaers 1995: 21).

Pinckaers reiterates that this is the desire of happiness that the Fathers envisioned when they do their moral theology: the open, generous desire that characterizes friendship. That is why to be a friend of God does not merely connote that we are to love God in any way but in friendship. All friendship is love, but not all love is friendship. Friendship is a special kind of love. It is the reason why Thomas Aquinas defined charity as not only love but also a certain friendship with Him. Aquinas has in mind a distinctive relationship between God and humans. Human beings are not simply called to love God, they are to love God as friend (Wadell 1992).

To be God's friends is to be open to God and neighbour and to become generous in sharing God's happiness. In other words, if a human sincerely loves God as friend, he/she must also love and share the happiness of God to His neighbour and to the rest of God's creation at the larger extent.

It has been taught that the virtue of charity as friendship with God ought to be extended to everyone and to everything that is willed and loved by God. If the human sincerely loves God, he/she must also love God's friends and everything that is loved and cherished by God. This is the inclination one must practice in loving one's neighbour and equally with the rest of creatures of God. This is the moral obligation/principle of every individual to practice friendship with God specifically in relation to environmental concern. This argument is the organizing idea of the author in his proposal to articulate a relevant environmental ethics from the perspective of virtue ethics. It is considered as a foundation of our fraternal love and equally for our love and care for nonhuman beings in the environment. As regards to environmental concerns, humans' love and care of environment is grounded in their friendship with God. This love would realize itself through appreciating their calling - that is to share God's happiness to others and to the rest of His creation (Pinckaers 1995).

#### B. Conceiving the Virtue of Befriending the Earth

To see the earth as a community to which humans belong, one can promote friendly attitudes of love, respect and admiration towards them. Moreover, humans are dependent and benefited in return to the ecological system in which they are inextricably embedded, that is why to preserve harmonious relationships between them is proper. Humans should friendly participate reciprocal concern with other members of the land community.

To practice this virtue of befriending the earth, the researcher proposes respect (ecological sensitivity), and benevolence as crucial in the midst of environmental issue today. These virtues can and do motivate people to act as good friends of the earth.

### 1. Respect

Science tells people today that they are derived from the Big Bang explosion and their bodies are made out of stardust. It implies that their bodies are related to all the other product of this explosion, including stars, animals, plants, and the land itself. Humans are made from the same particles that make up the rest of the universe. Humans are members of the earth's community in the same way as individuals of other species. The human community is not isolated from the environment, but part of it. There is inter-connectedness between humanity and the rest of creation. If humans are intimately related to the earth, they need to consider not only what is best for them, but also what is best for the ecological community of which they are all part. Moreover, since humans are closely related to nature, abusing and destroying anything of the earth is one way of destroying themselves (Berry 1998).

Respect for biosphere and ultimately the ecosystem equates with a respect for them with intrinsic value and purpose. Each creature has its own intrinsic value and purpose in this vast web of reality. It cautions humans that environmental entities are not merely a commodity for satisfying their wants and needs. The well-being of the ecological community must take in consideration. One can also observe the order and balance of nature. Although the disruptions and unpredictability are also present in nature because of physical and man-made calamities, and of predatory aspect of nature, nature seems ultimately to return to harmony and order. It is observable that

the cycle of life and death in nature is one with ours; in the end, all living things are born and die. The death of one reality brings new life to

another, and this cycle is the same in both the natural and supernatural dimensions of reality. In all of this there is a goodness and beauty that reflect the goodness and beauty of the Creator. There is a tranquility in all of reality that can resonate in our inner selves and draw us toward it (Hill 1998: 288).

Thus, to befriend to the ecological community individuals need to see themselves as part of an immeasurably large, dynamic process of change and unfolding. The earth in which humans are related is fruit of an expansive process, which includes many billions of galaxies. The earth is not an inert and passive planet (Hill 1998). As the organic model indicates, the earth is a living organism, vital, sensitive and responsive. This idea is in contrast with the mechanistic paradigm that emerged in the sixteenth and seventeenth centuries with the development of science and technology, which views matter as lifeless, in the organic model everything in nature is permeated with life (Frangomeni 1994). Thus, the earth is something to be respected on the ground of its vitality and sensitivity. The earth is not only a living, sensitive organism in the organic model, but she is also nurturing and beneficent. Like a caring and kind mother, the earth provides everything for human's need and survival. In this model, one can see the harmony between nature and human beings. Nature is kind and generous to human beings by providing them with the stuff of existence, and they are to be kind to the earth, caring and respecting for it and being grateful for the abundance of its gifts (Frangomeni 1994).

## 2. Benevolence

Good friendship wants and seeks what is genuinely best for the friend/s. This is the benevolent spirit of true friendship, where friends are working actively and joyously for another's good. There is no intention to use and manipulate others for self vested interest.

The purpose of one's friendship here is not only wishing his/her friends well, but actively working for their well being and happiness. This is what it means to be benevolent to another – to wish nothing but the best for them. This is the joy of friendship when individuals do something fine for the person they love. Paul Wadell also says,

Friendship is the love whose whole trust and energy toils for the good of the other. It is a love whose very activity is to cultivate the well-being and flourishing of the other, not because the one who loves has no good of his own, but because what he loves and sees as his good is the good of his friend. Benevolence implies not only that the friend is loved for herself, but also because she is loved the active seeking of her good is the sustaining project of the friend's life. To love with the benevolence proper to friendships means not only that one hopes for the good of the other, but also that one consecrates his energy to seeking and upholding her good. That is what friendship is – devotion to the good of the one we love (Wadell 1992: 66).

The same is true with one's friendship with the earth. One can practice benevolence as a virtue of befriending the earth by seeking and doing that makes her stable, integrated and beautiful. In this challenge, one must be guided by benevolent dispositions and practices that have tended to preserve the integrity, stability and beauty of ecosystem. One should must embrace a benevolent dispositions and practices that is not self-serving that brings benefits to humans but harm to everything else in the earth.

Moreover, for the person of faith, benevolent dispositions and practices are shown by means of treating the earth as God's friend as Pinckaers mentioned. Then, the earth is a reflection of the goodness and love to be cared for, and gratefully sustained. In this image, the entire earth community is seen as a dynamic, vulnerable, visible reflection of the invisible God. The sacramentality of God's beautiful creation indicates a way of perceiving the natural world that evokes a special kind of appreciation – reverential appreciation. It is a kind of aesthetic appreciation where reverence is not given not to natural things but also to God whose active

presence and character is manifested by them. With these examples, one can only deduce that if the earth, the rainforest, the sea, the stream, and the valley are all manifestations and representations of God; then, their destruction is also a repudiation of one's friendship with God. The massive extinction of species in our times is not only an offense against nature but also a sin against one's friendship with God. This kind of faith conviction also affirms what Thomas Berry has said, "We should be clear about what happens when we destroy the living forms of this planet. The first consequence is that we destroy modes of the divine presence forever" (Berry 1998).

### C. Conclusion

One can see how Pinckaers presented his holistic approach in doing ethics. He provides a holistic understanding of the moral theory that includes the question of moral obligation and virtue. For him, the concept of obligation is an essential ingredient in moral theory and it is impossible to construct a kind of moral system emptied of obligations and principles. He is merely critical of casuistry and the traditional moral manuals because they misled the whole discipline of Christian ethics into an improper preoccupation with law and obligation and neglected the moral life in terms of happiness and virtue.

The researcher affirms the classical mentality as discussed by Pinckaers, that to live in friendship with God is to will what God wills, to seek what God seeks and to love what God loves. Friendship with God illumines and guides our obligation with others including the rest of God's creation. This moral argument becomes the author's basis to link friendship with God and the environmental concerns today. The virtue of charity as friendship with God becomes a chief inspiration to the individual's moral friendship with the earth. This is the challenge of

becoming friends of God wherein it teaches individuals to be concerned about something other than themselves. It obligates them to be attentive to the needs and well-being of others including befriending the earth.

One can see how important friendship is with regards to one's relationship with others, with the natural environment and with God. It is through friendship that one can transcend oneself from the realm of self-interest for the sake of the other, most especially to the vulnerable ones. Friendliness is a positive disposition that has something to offer in relation to the ecological community.

With all of this, this paper shows that a virtue of befriending the earth is itself a liveable environmental virtue. While this study is in one sense theoretical, it is in fact intensely practical, for the virtues should, after all, not merely to be studied and analyzed but to be put into practice. As Aristotle reminds the readers in his own book of ethics, "Surely, as the saying goes, where there are things to be done the end is not to survey and recognize the various things, but rather to do them; with regard to virtue, then, it is not enough to know, but we must try to have it and use it" (Bouma-Prediger 2001). This is one important contribution of virtue ethics based on Pinckers' approach in which the day to day lifestyle or character is given importance which is also an essential component of solving the environmental problem.

The call to befriend the earth is an environmental virtue that can contribute something for us to live well both personally, and socially. The environmental virtue of friendship indeed is a wonderful disposition, if rediscovered and given the right attention, has something to offer in the field of holistic environmental ethics.

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**Yoko Ono Would Be Referred to as *Ono Yoko* in English Textbooks in Japan:  
The Shadow of the Textbook Authorization System in Japan**

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**Abstract:**

In international communication scenes in English, Japanese names are mostly expressed in the order of given name and family name as is the practice of not only English speaking countries but the majority of the world. However, somewhat surprisingly, Japanese names are rendered with the opposite order in English textbooks in Japan. The current study will argue that the adoption of the “unnatural” order is due to the textbook authorization system in Japan.

As of now, there are two ways of expressing Japanese names in English with regards to the order among given name and family name; that is, the order of given name first and family second and that of family name first and given name second. (The coexistence of the two orders is understandable given that in Japanese, Japanese names are said/written in the order of family name and given name.) However, a moment of reflection is enough to see that the situation is confusing in terms of communication; that is, given a two-part Japanese name in English, it cannot be definitely determined which part denotes which name, given name or family name. In the full paper, it will be formally demonstrated that the probability of a name being transmitted correctly in a situation with the two ways available is at best  $\frac{1}{2}$ .  $\frac{1}{2}$  is a probability of “by chance”; thus, you have no control over the outcome, which is totally unacceptable for a convention of transmitting information. However, once one strategy is recognized as “dominant” over the other in the sense that the former is more likely to be used than the latter, the probability of transmitting a name correctly using the dominant strategy shoots up to over  $\frac{1}{2}$ . Again, this proposition is formally presented in the full paper. The answer to the question, which strategy, or order is dominant over the other is obvious

considering the current international communication in English at large. It is indisputably the order of given name-family name that is dominant. Given that, it is rational to adopt the order of given name-family name when presenting a name in English, irrespective of whether the person is Japanese or the introduction is taking place in Japan or not. Then, the obvious question here is why on earth English textbooks in Japan have adopted the dominated, or “irrational” strategy.

I will argue that is due to the textbook authorization system in Japan and more specifically, a report submitted in 2000 by the Japanese language council to the Ministry of Education, Culture, Sports, Science and Technology, entitled “Kokusai shakai ni taioo suru nihongo no arikata” (What Japanese ought to be in keeping up with the globalization of the society). In the report, there is a section specifically concerning the issue under consideration here, i.e., the issue of order between given name and family name for Japanese in English. The council in effect endorsed the order of family name and given name for Japanese names when they were conveyed in English, as they said that (i) In general, it is desirable that individuals will be introduced or described in the fashion that the unique forms of their names are preserved, (ii) It is desirable that when Japanese names are represented in Roman alphabet, they will be written with family name first and given name second, and (iii) It is hoped that the above two points will be practiced in teaching English at schools. It was when the new textbooks were authorized after the issuance of the report that all the English textbooks adopted the order of family name and given name for Japanese names while only a couple of them had adopted the order before the report. From which, it is clear that the adoption of the order was motivated by the presence of the report under the textbook authorization system in Japan.

# **The Not-so-Accidental Tourist: Intentional and Premeditated Travel for Transformation**

**Topic:** Transformative Education (Adult Education)

**Presentation Format:** Paper Session

**Description of the Presentation:**

This paper weaves together three travellers' experiences of the world, written and pictorial reflections, understanding of self, and critical and theoretical analyses. We aim to find ways to make learning through travel intentional and premeditated, as opposed to an incidental or unintentional outcome of the travel experience, offering a set of practices that will enhance various types of travel from a simple walk in the forest to more exotic journeys.

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## ABSTRACT

Aristotle once said: “The world is a book. Those who do not travel read only one page.” Such was his peripatetic view of learning – the notion that we wander, meander, and walk about, experiencing life through the senses, talking, making meaning, ultimately arriving at a new intellectual state. Aristotle firmly believed that “Nothing is in the intellect that was not first in the senses” (Peripatetic Axiom found in *De veritate*, q. 2 a. 3 arg. 19), and ultimately this was how and what he taught. This being said, we do not believe that this happens in isolation without deliberate, focused, even exquisite attention to possibilities for learning and transformation. This paper weaves together three travellers’ experiences of the world, recorded in both pictorial and linguistic journals, replete with our reflections on the experience, our developing understanding of self, and a critical and theoretical analysis. We investigate how, we, as researchers and educators can bring together our experiences of people, place, and time with what we know about teaching and learning, in an effort to understand the educative and transformative value of travel, both from formal and informal perspectives.

We consider travel as more than tourism, more than reading a book, more than looking at a picture, more than viewing a video, more than what can be experienced in the comfort of one’s home. We consider travel as transformative experience, just on the edge of our comfort zones. Travel, for us, is a planned and deliberate opportunity for transformation and enhanced understanding of self, others, and world. We aim to, through our own experiences and key learnings, find ways to make our learning through travel intentional and premeditated, as opposed to an incidental or unintentional outcome of the travel experience (Mitchell, 1998), ultimately offering a set of practices that will enhance various types of travel from a simple walk in the forest to more exotic journeys.

Title of the Submission: Entrepreneurship Education at the Secondary School Stage and Higher Secondary Stage of Education: An Indian Perspective.

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## Abstract

With a population of 121 crore at the last count and 325 million people to reach working age by 2020, India is also a fast growing economy. With an unemployment rate at 9.4 percent for the year 2010 and 71 percent job seekers registered with the employment exchanges at less than 29 years of age during 2003, educated job seekers from standard X and above, constitute 75 percent of the total job seekers registered with the employment exchanges in India during 2003 as per a report from the Planning Commission, Government of India (2006). A society with an entrepreneurial outlook that challenges, exposes, and satisfies the aspirations of the young; both in rural and urban India are the need of time. Entrepreneurship education when exposed to the students at the secondary school stage and higher secondary stage of education helps the impressionable minds understand entrepreneurship as an exploratory foundation at an early phase of their life.

Entrepreneurship Education at the Secondary School Stage and Higher Secondary Stage of  
Education: An Indian Perspective.

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“Indians claw their way to the top in an extremely competitive environment. Just as nobody helped them, nobody tried to pull them down either,”

- **Kanwal Rekhi, MD, Inventus Capital Partners and Serial Entrepreneur (2103, May 23). Times of India.**

The Indian economy grew at its slowest pace in a decade in 2012-13 and the data released by the Central Statistical Organization (CSO) on 31<sup>st</sup> May, 2013 showed that the economy grew 5% in 2012-13, compared to 6.2% expansion in the previous year. What has been most disappointing is that industrial output growth in 2012-13 has been a mere 1%, posing a threat to job creation and overall growth.

- **(2013, June 1). Times of India.**

Skills and knowledge are the driving forces of economic growth and social development of any country, and the economy becomes more productive, innovative, and competitive through the existence of more skilled human potential

- **Planning Commission (2006), Government of India.**

Being one of the most populated countries in the world, India is also a fast growing economy. There is tremendous scope for growth considering the growing Indian population, which stood at 1.21<sup>1</sup> Billion (121 Crore) on the last count (Census 2011). With a work force of

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<sup>1</sup> Office of the Registrar General and Census Commissioner, Government of India, 2011

440 million, the need for employment opportunities has also increased drastically.<sup>2</sup> The unemployment rate for the year ended 2010 was at 9.4<sup>3</sup> percent and by 2020, 325 million people in India will reach working age and India will have the largest working population in the world.<sup>4</sup> The census projection report shows that the proportion of population in the working age group between 15 to 59 years is likely to increase from approximately 58 percent in 2001 to more than 64 percent by 2021.<sup>5</sup> The number of job seekers registered with the employment exchanges in India was 40.3 million as on 31.12.2005 and 71 percent job seekers registered with the employment exchanges are less than 29 years of age during 2003 (Planning Commission 2006, Government of India). Out of an estimated 397 million employed, about 122 million are poor, i.e. living below the poverty line and one of the main reason for such a situation; growth rate of labour force being higher than the growth rate of employment (Planning Commission 2006, Government of India).

Forty-five percent of the developing world's population lives in households involved in agriculture and 27 percent in smallholder households, and most depend on agriculture for their livelihoods. The agricultural sector generates on average 29 percent of gross domestic product (GDP), employs 65 percent of the labour force in agriculture-based countries, and is the key to generating an overall growth.<sup>6</sup> Bulk of the employment in India is concentrated in the agriculture sector and in rural areas agriculture constitutes up to 68 percent of the total rural employment.<sup>7</sup>

Growth of a nation depends not only on the industrial sector but also on the Human

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<sup>2</sup> <http://india.gov.in/citizen/employment.php>

<sup>3</sup> Annual Report 2010 – 2011, Ministry of Labour and Employment, Government of India

<sup>4</sup> Murthy, Narayana N R. (2009). A Better India; A Better World

<sup>5</sup> Office of Registrar General and Census Commissioner (RGCC), Government of India, 2006

<sup>6</sup> Data from the World Development Report 2008 (World Bank 2007) and the World Bank Web site

<sup>7</sup> Annual Report to the People on Employment (2010), Ministry of Labour and Employment, Government of India

Development. India stood at 127<sup>th</sup> rank for the year 2003 on the Human Development Index (HDI) rank and Human Development Index value stood at 0.602<sup>8</sup> and in nearly a decade, nothing has improved and India currently ranks 136<sup>th</sup><sup>9</sup> among 187 countries in the global Human Development Index for 2012 and the Human Development Index value stood at 0.554<sup>10</sup> for 2012.

### *Education Scenario*

In India, the combination of classes for different levels of school education / school stages differ from state to state; primary school stage comprise classes I-IV / I-V, upper primary school stage comprise classes V-VII / VI-VII / VI-VIII, secondary school stage comprise classes VIII-X / IX-X, and higher secondary stage comprise classes XI-XII.<sup>11</sup> Majority of the children in India attend primary education with great difficulty. With the nation allocating its resources towards education as a fundamental right<sup>12</sup>, healthy growth is expected in the number of elementary level students passing out. Universalization of Elementary Education (UEE) is a constitutional provision and a national commitment in India and with the expansion of enrolment at the primary level of education, the pressure for expansion of the upper primary level of education has increased (Varghese and Mehta, 1998). Gross Enrolment Ratio (GER) increased in 6-14 age groups to 114.61 in 2007-08 from 96.3 in 2001-02 at the primary level and to 77.50 in 2007-08 from 60.02 in 2001-02 at the upper primary level.<sup>13</sup> The mean years of schooling were

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<sup>8</sup> Human Development Report 2005, UNDP

<sup>9</sup> Human Development Report 2013, UNDP

<sup>10</sup> Human Development Report 2013, UNDP

<sup>11</sup> <http://www.ncert.nic.in/>

<sup>12</sup> The Right of Children to Free and Compulsory Education Act (2009), Ministry of Law and Justice, Government of India

<sup>13</sup> Annual Report 2009-10, Department of School Education and Literacy, Government of India

4.4<sup>14</sup> for 2010 and the expected years of schooling was 10.7<sup>15</sup> for 2011. According to the Seventh All India School Education Survey (AISES) conducted with reference date as September 30, 2002 there were 2, 18, 88,898 children enrolled at secondary stage and 1, 14, 37,883 children were enrolled at higher secondary stage, and in comparison to the Sixth Survey, the enrolment had increased by 43.82 percent and 50.52 percent for secondary stage and higher secondary stage respectively.<sup>16</sup> According to the latest data available from the provisional statistics of the Eighth AISES as on 30.09.2009, the percentage increase in the enrolment from the 7<sup>th</sup> AISES (2002) for India were 5, 28, 41, and 66 percent for classes I-V, VI-VIII, IX-X, and XI-XII respectively.<sup>17</sup> Substantial increase was seen in the provisional 8<sup>th</sup> AISES (2009) for enrolment to classes IX-X and XI-XII at 41 percent and 66 percent respectively in comparison to classes I-V and VI-VIII.

As per estimates of the National Sample Survey Organization, there were about 90 lakhs people totally unemployed in 1999-2000, out of which about 55 lakhs were educated with secondary and higher education levels (Planning Commission 2006, Government of India). Educated (standard X and above) job seekers constitute about 75 percent of the total job seekers registered with the employment exchanges in India during 2003 (Planning Commission 2006, Government of India). The secondary education curriculum does not provide the knowledge or skill sets required for present day job opportunities for nations like India. In many developing and transition countries, however, the secondary education curriculum often remains abstract and

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<sup>14</sup> Human Development Report 2013, UNDP

<sup>15</sup> Human Development Report 2013, UNDP

<sup>16</sup> <http://www.ncert.nic.in/>

<sup>17</sup> <http://www.aises.nic.in/>

unconnected to social and economic needs.<sup>18</sup> It is largely driven by the high-stakes public examinations introduced in many of these countries by the colonial powers that still hold the key to university access and to elite professional jobs.<sup>19</sup> The shift towards knowledge-based economies makes the renewal of the educational foundations urgent and challenging, more particularly for developing countries like India.

### ***Vocational Training***

Vocational training has been devised primarily as a tool for employment. It has been tried and is continued in many parts of the world, but the reach and participation are not satisfactory, and the effects of this process are not encouraging as the experiences across nations show. In India, the National Vocational Training System (NVTs) has evolved only during the last five decades. Some of the weakness of NVTs; there is a mismatch between skills requirement of the world of work and skills produced by NVTs, inadequate involvement of stakeholders in the design and implementation of the training programmes, and the emphasis over the years on quantitative rather than qualitative aspects (Planning Commission 2006, Government of India).

Many a times, the training methods, tools, and processes are outdated and not relevant to the current employment needs. Employers look for skill sets in potential employees to be put in use at the earliest, with minimal training and orientation from their end. Assessments have shown that employers are not satisfied with the quality of vocational education and training.<sup>20</sup> In particular, they complain of the low quality of training schemes, trainees' lack of practical skills,

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<sup>18</sup> Innovation Policy: A guide for Developing Countries. (2010). Washington, D.C., The World Bank.

<sup>19</sup> 'Expanding Opportunities and Building Competences for Young People: A new Agenda for Secondary Education', Washington, DC: World Bank.

<sup>20</sup> Innovation Policy: A guide for Developing Countries (2010), Washington, D.C., The World Bank

and inappropriate training content.<sup>21</sup> In India, for example, only 3 percent of rural youth and 6 percent of urban youth have received vocational training (Froumin and Others, 2007). Out of an estimated 397 million employed in India, about 122 million are poor, i.e. living below the poverty line and one of the main reasons for such a situation; labour force being inadequately skilled (Planning Commission 2006, Government of India).

### ***Entrepreneurship; Employment, Economic Growth, and Sustainable Development***

Providing employment is not sufficient and efforts must be made at creating employment opportunities. Small business researcher David Birch reports that over a recent five-year period, the largest companies in the United States shed 2 million jobs; during the same period, small businesses created 10 million jobs (Martin, 2003). Every year, American entrepreneurs launch more than 850,000 new businesses, and the level of interest in pursuing entrepreneurship as a career remains high among people in all age groups (Price, 2006). Eighty-four percent of those who launch businesses are doing so for the first time (Dennis, 1999). One of the most comprehensive studies of global entrepreneurship, conducted by the Global Entrepreneurship Monitor (GEM), shows significant variation in the rate of new business formation among the nations of the world when measured by the total entrepreneurial activity, or TEA and the study found that 11.3 percent of the total adult population in the United States – roughly one in nine people – is working to start a business, and nations in Americas – North, South, and Latin – led the world in entrepreneurial activity, with Asian countries posting the lowest levels of entrepreneurship (Zimmerer, Scarborough with Wilson, 2009). The study also concluded that these different rates of entrepreneurial activity may account for as much as one-third of the variation in the rates of economic growth among these nations (Global Entrepreneurship Monitor

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<sup>21</sup> Froumin and others (2007); Larsen, Kim, and Theus (2009)

2004, and London Business School, 2005). Entrepreneurial actions create employment opportunities, and in the process, may well ease the burden of the governments considerably in employment generation, and help alleviate unemployment to an extent. This is possible when there is an environment conducive and sustainable for entrepreneurship.

The role of agriculture in sustainable development and poverty reduction for the vast majority of developing countries cannot be overemphasized (Larsen, Kurt, Kim and Theus, 2009). The rising agricultural productivity can also encourage broad entrepreneurial activities such as diversification into new products, the growth of rural service sectors, emergence of agro-processing industries, and expansion into new markets.<sup>22</sup> India being an agrarian economy, farmers with no formal education surprise all with their perseverance, innovation, dedication, ingenious marketing methods, and demand capitalizing abilities as far their farm produces are concerned. They ably exploit the markets without any formal exposure to management jargons or practices; like discounting the perishable products when time progresses, taking advantage of a place and availability to price the products, and in using ingenious marketing tools effectively. This could be seen among small farmers in the rural markets on farm, agricultural, and dairy produces. The rural population and the agricultural communities need to explore, and exploit the opportunities available and with no exposure to education in entrepreneurship, they may not be able to identify and take advantage of opportunities constructively.

### ***Entrepreneurship Education***

Youth entrepreneurship programs prepare young people to be responsible, enterprising individuals who become entrepreneurs or entrepreneurial thinkers and contribute to economic

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<sup>22</sup> Diao and others (2008), IFPRI Discussion paper 835, International Food Policy Research Institute, Washington, D.C

development and sustainable communities.<sup>23</sup> Entrepreneurship education provides opportunities for youth to master core entrepreneurial knowledge, skills, and attitudes, including recognition of opportunities, generation of ideas, creation of ventures, and critical thinking.<sup>24</sup> Entrepreneurship education for youth<sup>25</sup> may be described as a process that seeks several specific goals like providing opportunities for youth to start and operate appropriate enterprises, generating an understanding of a variety of industries, portraying the relationship between risk and reward, and providing opportunities for young people to understand basic economic concepts such as savings, interest, and supply and demand.<sup>26</sup>

A new approach to provide entrepreneurship education at the secondary school stage and higher secondary stage of education in the curriculum is the need of the hour. Introduction to basic economic concepts such as savings, interest, supply and demand, different types of industries, and brief biographies of successful entrepreneurs in story format (with more emphasis on the hardships they encountered) at the secondary school stage of education and exposure towards core entrepreneurial knowledge, skills and attitudes, recognition of opportunities, generation of ideas, creation of ventures, critical thinking, generating an understanding of a variety of industries, portraying the relationship between risk, and reward at the higher secondary stage allows the classrooms a structured system of delivery on these important points on entrepreneurship to the young, impressionable, and raw audience. These entrepreneurial classrooms during the normal course of education from classes IX till XII help understand, grasp,

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<sup>23</sup> Innovation Policy: A guide for Developing Countries (2010), Washington, D.C., The World Bank

<sup>24</sup> Innovation Policy: A guide for Developing Countries (2010), Washington, D.C., The World Bank

<sup>25</sup> see <http://www.entre-ed.org>

<sup>26</sup> Innovation Policy: A guide for Developing Countries (2010), Washington, D.C., The World Bank

exhibit, and challenge the creative forces of the young students towards entrepreneurship and in the process help create better awareness on entrepreneurship to these students.

### *Conclusion*

An education system that includes entrepreneurship education at the secondary school stage and higher secondary stage of education could ignite the minds of the young students towards entrepreneurship at a later date as an alternate to employment and thus, helps cast the net far and wide for potential entrepreneurs; both in rural and urban India. With shrinking jobs and rising unemployment figures, entrepreneurship education can create confidence in the youth and encourage individuals to look at entrepreneurship as an accepted career option. Hence, it is imperative that entrepreneurship education is introduced compulsorily at the secondary school stage and higher secondary stage of education. This in effect allows the students to inculcate this fundamental discipline of entrepreneurship at an early stage as an exploratory foundation and in turn, helps expose these impressionable minds with the methods and processes of entrepreneurship.

Entrepreneurship education when introduced early in the education system, as it helps healthy participation by students due to social compulsion, invites curiosity among some of them that ultimately could lead to action by a few in them. The exposed minds could thus take advantage of such education and exposure to further enhance their knowledge and confidence. Advantages of the government programmes such as grants, loans, subsidies, and financial assistance can reach the right target group with the informed mind aware of such schemes and programmes, exploiting these schemes and resources ably. Sustained exposure towards entrepreneurship from the secondary stage of education helps achieve an informed support base

among family, friends, and society in the times to come. This in turn could help create a strong eco system for entrepreneurship and change the perception of Indian society positively towards entrepreneurship for everyone's benefit.

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## PROCEEDINGS SUBMISSION

**Title:** Finding Self in Places, and Places in Self

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### **Abstract:**

My proposed research focuses on the relationship between personal narrative, sense of place and art making. Within the framework of autobiography, inquiry, and writing, I propose to ask: How do 'place' and 'sense of place' influence the narratives we tell and help us to story ourselves, and serve to impact on our art-making? How do artists articulate their understanding of 'place' and 'sense of place' in general and in relation to their art? And how can this be cultivated in classrooms across the country? What is the impact for education?

My objective is to explore/discover/seek, and to understand if narrative inquiry, if story, can be recognized as a 'place', in and of itself. A story that people can first come from, and acknowledge – be they teachers, community leaders, parents. The objective is to seek to find meaning of not only a person's artwork but of their lives.

To allow an opening in the heart and in the mind by exploring life and lived experience through narrative inquiry.

The methodology is an exploration of the idea of place within family, within community, where we are in place and where we place ourselves. We need to understand our sense of place in all of these aspects to understand ourselves as humans, and to understand what the art that we create means. In addition to my own experience and narrative, I will also incorporate that of other artists. I intend to meet with and, through the process of conversation and dialogue, interview artists in regard to the focus of this research. I wish to experience their experience(s), reflect upon it, and speak to it.

The way finding – my journey – will serve as a template for understanding others. The elements and the essence and how others experience the world. This research will add to the literature base on narrative inquiry, poetic inquiry, and the impact of lived experience and self-realization on art-making and on educative practices involving all learners. This research is important in that it is in the spirit of honouring. Between us all and between all lived experiences are interplaces. Within those inter-places yet more stories are seeded. Inter-places and interspaces, contributing to an intricate network, braiding/blending/blurring, connection and communication, like a galaxy.

**Title:** A Puzzling Scenario: Creating an Academic Success Center at a Comprehensive State-owned University

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**Abstract:** How do you combine existing student services with new ideas in support of incoming and continuing students? Services are intended for at-risk, transitioning, and academically successful...ALL undergraduate students! This paper will address:

- Charge of the university-wide, presidentially appointed committee – identification of potential committee members,
- Politics of integrating Academic Affairs, Student Affairs, and existing programs that may operate in isolation,
- Development of initiatives and the role of assessment,
- Final recommendations of the committee

## **Overview**

Institutions of higher education often respond to student support on an “as needed” basis. As populations grow, shift and change, the support needs of various constituencies become more critical. Witness the growth in disability support, veterans outreach and minority affairs over the past decades. In many cases, support programs develop organically to meet the changing needs and are outgrowths of one specific office or department because of their affiliation with the group in need – e.g. tutoring programs developed within an academic department.

While many institutions do an admirable job of supporting their students, this type of program development often leads to a confusing maze of offices working in isolation, duplicating and or competing for scarce resources and overburdening of certain staff while leaving students with even more confusion as to where to turn for help. Who hasn't heard horror stories of students being sent from office to office trying to get help with what should be a simple problem to solve.

This paper discusses the process used at Indiana University of Pennsylvania (IUP) to develop a more centralized approach to academic support for our students. The result was the Academic Success Center (ASC@IUP) that coordinates a number of offices across campus currently offering academic services. The center was designed to focus on meeting the needs of students in transition, at-risk students, and undecided majors, with the following definitions:

- Students in Transition – those seeking to change major, those coming from others campuses, or those transitioning from non-high school settings such as veterans and adult learners.
- At-Risk Students – those with an overall GPA below a 2.0.
- Undecided Majors – those selecting the UNDC major designation which is available in any of the six academic colleges.

This paper will discuss the process used from inception to development, to finalized proposal in developing the center. For each step, the process that was followed at IUP is described and also additional considerations to replicate this process at other institutions are presented.

## **Background**

While there is a long history of student support at IUP, including a short-lived “Student Success Center” initiated and run by the Division of Student Affairs, this most recent project was initiated by the arrival of a new president. To understand the process which was used to develop the final proposal for a center, it is necessary to understand the structures that were in place when the project began.

Indiana University of Pennsylvania is one of 14 state funded schools forming the Pennsylvania State System of Higher Education (PASSHE). It is a doctoral institution serving approximately 13,000 undergraduates and 2,300 graduate students. The university has a main campus, and two small regional campuses, one of which is residential. The main campus is primarily residential, with new suite-style residence halls housing more than 3,200 students organized into living/learning communities. All students are required to live on campus their first year. The university is organized into six academic

colleges and a graduate school with the Division of Academic Affairs headed by a Provost. The institution has other divisions including a Division of Student Affairs overseen by a Vice President/Dean of Students. Student support is distributed throughout the institution (Table 1).

While advising at IUP is the purview of the unionized faculty, probation and academic recovery of academically at-risk students are overseen by Assistant and Associate Deans. Undecided students are directed into and advised by the college that most closely fits their interests. The Department of Developmental Studies, housed in the College of Education and Educational Technology, oversees various developmental courses, some centralized tutoring, and advising of a population of under-prepared students identified in the admissions process. The Office of Advising and Testing coordinates Disability Services and is overseen by the Division of Student Affairs. Additional tutoring is run by individual academic departments. Veterans outreach is handled by a variety of offices on campus including Financial Aid, Student Affairs, a Veterans Outreach Group and Enrollment Management.

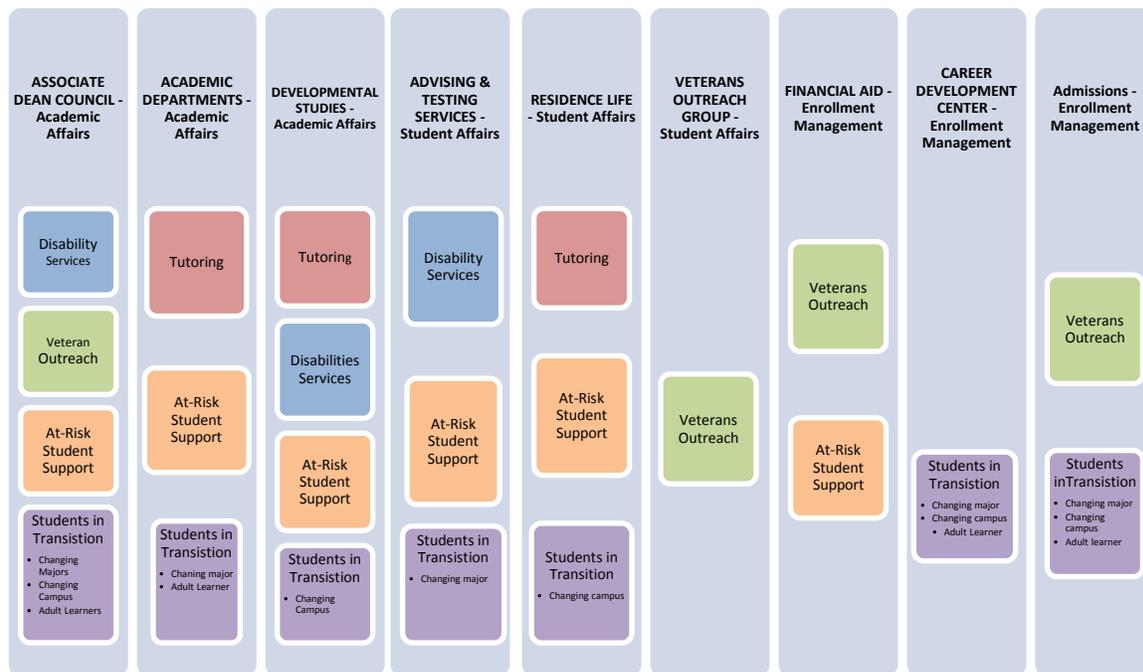


Table 1 Distribution of Student Support Services

As is common in universities, as the institution grew and times changed, priorities changed, resource availability changed, and offices were moved, realigned and reassigned to fit the changing budgets and priorities. Most recently, PASSHE has placed higher priority on measuring the success of its universities by measuring their success with students. Specifically, a portion of PASSHE Performance Funding is determined directly from comparative measures of student retention and graduation rates. This initiative led directly to an examination of what services IUP provides for its students' success and how easily students can take advantage of those services, which in turn has led to a proposal to develop a centralized "clearing house" or "one-stop shop" that will serve as an Academic Success Center for the

university. The rest of the paper will outline the steps taken in the development of the center and address the major issues that need to be considered in the design and implementation of such a center.

### **Initial steps**

Once the idea is proposed, assemble a small preparatory team to do some groundwork. At IUP, the new president requested that the Associate Dean Council investigate the development of a student success center. The Associate Deans assembled a small team of colleagues, familiar with the university, to explore the concept of a center. This team brainstormed ideas including what a center would look like; what services it would offer, and evaluating what services already exist. Additional considerations included what populations might the center serve; who should be involved and who would possibly object if not consulted; what tasks would need to be done? This team submitted a proposal to the President, requesting seed money and resources to begin their work.

After the initial brainstorming, the preparatory team assembled a list of service providers to include in the planning. A larger action team was then selected from this list. At other institutions, there are a number of factors to consider in choosing this larger group. The first is, how large should the team be? An overly large makes scheduling meetings unwieldy. An overly small team limits points of view and can cause problems with buy-in down the road if certain groups of service providers feel excluded. A second consideration is how the team members are selected. In some cases it may be more efficient to hand pick members known to the team as successful collaborators. In others it is best to ask that a representative be appointed. Since the IUP faculty is unionized and advising is one of the contractual roles of the faculty, the action team sought appointments from the union representatives. A third consideration in team selection is the diversity of the groups represented. There needs to be representation from faculty, staff and administration; there needs to be mix of academic affairs and student affairs. When choosing faculty, consider including established faculty who know how to navigate the system, and newer faculty who might not be as weighed down with past baggage, but rather might expose the group to new ideas and opportunities. The team will need representatives from the offices that provide services that the center will address. Consideration must also be given to the make-up of the team across gender and equity lines and will need representatives who understand the needs of the minority populations on campus.

Given those considerations, at IUP a team of 11 members was chosen as a task force. The make-up of the IUP team included three Assistant/Associate Deans, five faculty members, two administrators, and the Director of Social Equity and Diversity. The decision was made not to include student representation on the task force, but rather to solicit student input through surveys, focus groups, and other existing data.

### **The Action Team: Preliminary Research**

With the team assembled, the first step was to continue the brainstorming that was started by the preparatory team in a more comprehensive manner. Utilizing a SWOT analysis, the team developed the following questions for consideration:

1. What groups within the student population need to be served by an academic success center (ASC@IUP)? In general, there are many ways of “slicing” the student population by their needs or by their characteristics. The list that was compiled at IUP included: students with disabilities, students on academic probation, honors students, graduating students, undecided majors, veterans, nontraditional students, commuters, students of color, lgbt students, etc. It became clear that every group on campus could be served in some way by an ASC.

2. What services are currently being offered, and to which groups? As noted above, many offices at IUP already provide services needed by students. In consideration of this, the ASC@IUP was envisioned to be more of an “information hub” and resource center. The intention of the center is not to duplicate existing services, but rather to coordinate efforts and centralize outreach. To catalog existing services, the team sent the following request to all offices on campus:

*Dear Colleagues,*

*We are members of a new presidential task force to examine the possibility of starting a center to expand support for students and faculty at IUP in their pursuit of academic excellence. As part of this effort, we are making a holistic attempt to identify support services that are already available to our students.*

*We are aware that many support services already exist within our colleges, departments and the university, and we are asking for your help in identifying these services. We would appreciate it if you would respond to this e-mail and provide a list indicating the student support services currently offered by your college/department/office. Examples of the types of services we are interested in learning about include, tutoring, counseling, peer mentoring, career advising, workshops, websites etc. Please include, as well, services that may not “traditionally” be termed “support” but which you feel provide such.*

*Thank you for your assistance in identifying these important student resources so that we may add this to the inventory of existing services on campus. We would appreciate your response by June 19th.*

In general, it will likely be the case at any institution that numerous offices and programs are already in place to help students. This survey of existing services becomes critical in identifying resources and avoiding duplication. In addition, by determining what services are already available to students, it becomes easier to identify what services are missing.

3. What are the needs of our students? A subcommittee was assigned the task of developing a needs assessment for the student population. They were able to use some existing data because the university already participates in the National Survey of Student Engagement (NSSE) and conducts an annual living/learning survey of on-campus students. Most institutions will have similar data available. However, surveys for specific groups of students not represented by the existing data could be developed and administered.

4. What are other institutions doing? There is a wealth of information about best practices, high impact practices, model programs, etc. (See Recommended Readings/Resources). To inform their efforts,

another subcommittee gathered information on best practices and latest trends from current literature and institution websites. The team also travelled to other PASSHE institutions to visit existing student support centers and meet with relevant staff at each school. In addition, members of the team attended a PASSHE statewide conference focused on retention and participated in a webinar entitled “Who Owns Student Success, a Case for Institution-wide Engagement to Drive Retention.” Each year, there are national and regional conferences dedicated to student retention and success that can provide a wealth of resources.

### **Developing the Proposal**

With the preliminary analysis done, there was a clearer sense of the where our needs were greatest, what groups were currently being served, and what groups needed to be the focus for the evolving academic success center. The team categorized students with the highest needs into three major groups: students in academic difficulty (on academic probation), undecided majors, and students in transition (changing major, changing campuses.)

With the focal groups and the existing resources identified, the team began to concentrate on the operational details of the center to be included in the proposal. The following are the key questions that the group considered and that would need to be addressed in any proposal:

1. Space: Will the center have a physical location, or will it be a virtual presence? Many service offices already exist on campuses; it is often impractical to move or consolidate them physically. One solution is simply to provide better directions as to how to access them. However, if space is available, centralizing services should be a top priority. At IUP, the library is a central location on campus. A proposed renovation of the library building provided space for a central meeting place and offices for some of the new functions of the center. It was decided that two of these functions would be advising for undecided majors and coordination of tutoring services. Existing tutoring programs could make use of the new centralized space. Additionally the proposal moved the existing Writing Center to the same library space. Other current services will stay where they are, but the library will become a central “kiosk” where students could go to be pointed in the right direction.
2. Staffing: Who will run the new center? Will there be a coordinator? Will there be clerical support? If there is a virtual presence, who will maintain the information? If a faculty member is given this duty, is this done through release? Will there be a new position or expansion of duties for an existing position? Are there student work-study positions or graduate assistantships available to staff the center? At IUP, the center will need a person to staff the information desk. For the undecided students at IUP, the proposal provides for release time for faculty who will specialize in the advising of undecided students and students who are changing majors. For academically at-risk students, tutoring services and the Writing Center are currently staffed with existing funding. In addition IUP has a program that utilizes graduate students from a variety of applicable graduate programs as Academic Recovery Assistants who meet with students on academic probation to support their success. The proposal strongly supports an increase in the staffing for veterans outreach programs.

3. Current resources: What is the best way to link existing offices and services to this new initiative? As has been mentioned, it is often impractical to move all existing resources and services to one central location. The question then becomes, how does the center direct students to the correct service providers? At IUP, in addition to a staffed information desk, the central location in the library will feature information boards, flyers and pamphlets, and a directory of the offices on campus. The ASC@IUP will become the central hub where students report to get their direction. The center will solicit information from existing service providers to develop a central repository of programming information and resources. In general, campuses that do not have a physical location for a center should develop an active virtual presence that includes a dedicated information coordinator. Communication between the information coordinator and decentralized service offices would need to be developed.

4. New resources: What are the resource needs and funding sources for new initiatives? In conducting a SWOT analysis and surveying existing resources, an institution is bound to find gaps in their services that need to be addressed. It is likely the largest expense will be in staffing – whether it is clerical, released faculty, student work-study or a full-fledged administrator. Any proposal must also consider the incidental costs for additional services; there are costs in programming, copying, advertising, etc. A proposal must outline how these costs will be covered.

5. Visibility & Marketing: Are campus markers clear? How are offices and services advertised? Are staff and faculty aware of the services provided? How will students, faculty and staff be advised of the existence of the new center? At IUP, the library is already a place where students gather. Locating the ASC@IUP in the library will make it naturally visible and easy to find. Appropriate signage and markers will alert students to its location. There are a number of established avenues for advertising. IUP has a student newspaper, a student-focused daily electronic newsletter, a faculty and staff daily electronic newsletter, a dedicated cable channel in the residence halls and electronic bulletin boards throughout academic buildings. All of the key stake holders that provide services to students will be alerted so that they can begin directing students to the center.

6. Assessment plan: How will the organization know its initiatives have been successful? The success of any project must be measured by the extent to which it meets its goals and objectives. The assessment tools should be tailored to the specific intended outcomes. At IUP, the initial over-arching goal of the ASC@IUP is to improve the retention, graduation rates and overall satisfaction of three primary groups of students: undecided majors, academically at-risk students, and students in transition. The key measures to be considered in assessment of the center will be: satisfaction surveys of students who use the services, monitoring of retention, graduation and academic success of the targeted populations. The services offered to these target groups are designed to be available to the entire student population as well. Additional assessment of the center will include: headcounts of students who access the center, counts of hits on the center website, comparisons between existing and future NSSE and Living Learning surveys.

### **Finalizing the Proposal**

The answers to the above questions formed the framework for the proposal. An initial draft was produced by members of the action team, and reviewed by all. The team then sought input from the various stakeholders and service providers on campus. The final proposal was then submitted to the president during the Fall 2013 semester, with final approval anticipated in early spring of 2014.

### **Summary**

All in all, the process was an enormous amount of work, but provided a valuable opportunity for collaboration between many different areas of the university. The resulting center will be an important bridge between Academic Affairs, Student Affairs and Enrollment Management. It will provide much improved support for the targeted student populations; while serving the entire university community as a central hub through which they can navigate the complex network of offices and service providers that work so tirelessly for the success of our student body.

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- Hazard, L. (2012). Cultivating the habits of mind for student success and achievement, *Research & Teaching in Developmental Education*, 20(2), 45-48.
- Hersh, R. H. (2012). *We're losing our minds: Rethinking American higher education*. New York: Palgrave Macmillan.
- Padgett, R. D., & Keup, J. R. (2011). *2009 National Survey of First-Year Seminars: Ongoing efforts to support students in transition*. Columbia, SC: University of South Carolina, National Resource Center for the First-Year Experience and Students in Transition.
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- Richman, W. A., Anderson, A. D., Antoons, I., Brennan, B., Robinson, A., Smith, C., & Torain, M. (2013) Building the road to success for students at Prince George's community college. *Peer Review: AAC&U, Spring 2013*, 20-22.
- van der Sluis, H., May, S., Locke, L., & Hill, M. (2013). Flexible academic support to enhance student retention and success. *Widening Participation and Lifelong Learning*, 15(2), 79-95.

## Submission ID Number 315

**Title of Submission:** An Innovative Community-Based Service-Learning Program for Medical and Allied Health Students Yields Meaningful Results

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### **Abstract:**

**Background.** The Community Health Project (CHP) is a unique educational program that partners medical, pharmacy practice, public health and other allied health students with community-based social service and public health agencies. **Methods.** To assess the program's impact on interns, pre/post surveys were administered to measure the effects of the CHP experience on public health knowledge, attitudes, and skills related to working with populations served by social service and public health agencies. In addition, agency mentors completed a multi-item questionnaire regarding the benefits of the intern's involvement to the agency. **Results.** Examining intern participation over a three year period, 54 intern surveys indicated that the CHP summer experience significantly improved public health knowledge scores, changed attitudes towards public health, and enhanced behavioral intentions to refer future patients to social service and public or community health agencies. Parallel surveys from 25 mentoring agencies indicated that the majority felt that the intern's project provided educational tools for patients/clients; helped to provide education/training to their staff; helped to assess the needs of their agency; and enhanced their ability to attain the agency's mission. Mentors also indicated that the interns helped to serve more clients; provided needed information for seeking extramural funding; and determined what agency services need to be upgraded and/or restructured. **Conclusions.** CHP has proven to be a very effective interprofessional service-learning experience for students. Evaluation data demonstrate the mutually beneficial impact of the intern's involvement on the agencies' services and clients. The CHP model for academic-community partnerships illustrates how student's engagement in the public health and social service sector can benefit all involved.

## **Problem-Based Learning of Statistical Sampling Concepts Using Fantasy Sports Team Data**

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### **ABSTRACT**

The standard undergraduate business degree typically includes at least one compulsory unit in business statistics. Despite the importance of statistical literacy in business decision making a challenge remains to motivate students who wish to major in other areas. This paper explores a case of using a problem based learning approach to teach the core concepts of statistical sampling and the central limit theorem. The problem for students is in the design of the Australian Football League fantasy sports competition – the AFL Dream Team competition. In this competition player scores are used to measure the performance of fantasy teams. To broaden interest the design is to make the game attractive to people without a strong interest in football via selection of random teams. This provides a strong motivation of a ‘real’ problem in which to study statistical sampling in the creation of random teams. In addition the data is non-normal (a build-up of zero player scores) and positively skewed (a small number of very high performing players) thus allowing an analysis of how repeated sampling of random teams of different sizes can be used to illustrate the key concepts in the central limit theorem. The real nature of the data set enables the students to consider a range of problems that would not be present in simulated data which is likely to have a smoother and more continuous distribution. The paper presents details of how this case is used in the teaching program.

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# Experience Abroad: Developing an Enhanced Study Abroad Program

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## **ABSTRACT**

Studying abroad has increasingly become a part of many universities' curricula. Such a program needs to be more inclusive than simply sending students out of the country to study. A truly enhanced program should encompass the three time frames involved in every program: pre-departure, "in country," and post-return. To maximize the learning that can take place while students are abroad, schools should ensure that adequate pre-departure training is provided. Then, while "in country", students should be required to record data about different aspects of their daily lives. Finally, upon their return to their home countries, they should be given the opportunity to reflect on the experience they had. This paper addresses these time frames, and provides concrete ideas to be explored, issues to be covered, and activities that can be assigned, all of which will help enhance any study abroad program, allowing the students to make the most of their time abroad.

## **1.0 INTRODUCTION**

Contrary to what might be expected, the number of Japanese students who travel abroad for the purpose of study has seen a steep decline over the last few years. Project Atlas®, developed by the Institute of International Education, shows 60,225 Japanese students studying abroad in 2006. By 2010, that number was down to 40,487. Considering the Japanese government's ongoing focus on the importance of English and the development of more globalized citizens, these numbers are quite surprising. Matsumoto (2012) cites both the worldwide economic crisis and the fact that many Japanese college students must spend so much time job-hunting as possible reasons for this decline. Hosoki (2013) further points out that the current generation of Japanese students does not have the same level of attraction to the west as in previous generations. Despite this trend, or perhaps because of it, Japanese universities are developing more exchange programs, and placing more importance on them. As a result, many educators now find themselves working, at least in part, to help develop and support study abroad programs for their students. In a previous paper, Miller and Thorpe (2010) focused solely on the importance of pre-departure training. However, as a result of ongoing participation in study abroad programs, this author has come to realize that pre-departure training is only one aspect that can help students truly take advantage of their time abroad. There are two further steps that can be taken. This paper will discuss ideas and issues that can enhance a study abroad program during three different time frames: prior to departure, while "in country", and upon the students' return.

## **2.0 THE BENEFITS OF PRE-DEPARTURE TRAINING**

Studying abroad gives students a chance not only to increase their language proficiency, but also to become familiar with a foreign culture through personal experience. It gives them a chance to become more globally aware and become more emotionally mature (Ishino et al. 1999, Grove, 1989). However, unless properly prepared, sudden and total immersion in a foreign culture can become just as shocking and unpleasant an experience as falling into the pool can be to someone who can't swim. In order to make the most of their overseas experience, students need to be prepared such immersion before they ever leave their home country.

In writing on the Trends & Insights section of the NAFSA website ([www.nafsa.org](http://www.nafsa.org)), M. Green (2012) remembered the words of another:

As one international educator put it, it is difficult to teach intercultural understanding to students who are unaware they, too, live in a culture that colors their perceptions. Thus, awareness of the world around each student begins with self-awareness. Self-awareness also enables students to identify with the universalities of the human experience, thus increasing their identification with fellow human beings and their sense of responsibility toward them.

(para. 6)

Only by being self-aware at home, can students truly notice the similarities and differences they will find abroad. This idea is echoed by Whalen (1996), who warned against teaching students to forget about their own culture, and immerse themselves in their new one. He felt that the knowledge and experience students have of their home countries would only add the ability students would have to be both culturally aware and self-aware while abroad.

## **3.0 THE GOALS OF PRE-DEPARTURE TRAINING**

Depending on the school, pre-departure training can be anything from non-existent to a full semester program. When it comes to preparing students for any kind of a study abroad program, the advantages of having a multiple pre-departure training sessions are obvious, but even a single afternoon session can provide an opportunity to give students the tools and awareness that will help them handle a wide variety of situations, and thus take full advantage of their time abroad. For most students, studying abroad will be so far out of the realm of their own experience, they will not have a true understanding of what to expect or how to prepare. They often won't know what questions to ask that might help them prepare. Therefore, it is necessary to provide information the students might not even be aware they need. Because study abroad involves much more than just language study, pre-departure training should be focused in three core areas: Communication Skills, Cultural Matters, and Practical Matters.

### **3.1 COMMUNICATION SKILLS**

The most obvious challenge of a study abroad program is that students will be totally immersed in a foreign language. As a result, it is often the students' biggest concern

that they will not be able to communicate effectively in the host country. One way to combat this concern is to make students aware that there are certain conversations they will most likely have. By preparing in advance to answer questions they will most likely be asked on subjects such as themselves, their families, their universities, their hometowns, their free time activities, and the popular culture of home, they can easily create content that will facilitate communication in the host country and allay fears that they won't be able to speak.

One way to prepare students for such conversation topics is to utilize a project called the "poster book" in pre-departure training. These poster books provide students an opportunity to communicate in class and also help to foster communication while abroad, thus helping students with their confidence. To make a poster book, several sheets of A3 paper can be folded in half, and bound in the center, making it a convenient A4 size. Students are assigned topics such as the following:

1. About Me
2. About My Family
3. About My University
4. Life as a (19) year old
5. About Japan

For each topic poster they produce, students are encouraged to use pictures, drawings, and colors in addition to writing text. In developing these posters, students have the chance to reflect on their lives as Japanese, and by doing so, they develop more self-awareness of their own culture. Once completed, they can then practice talking about these subjects in class, and by bringing the poster books with them, students can use them as a jumping off point for conversations with teachers or host family members. They can refer to the posters as they speak. As the posters are somewhat image based, there is no script to be read, but rather subjects to both talk about and be asked questions about. In this way, the communication is more meaning based. Another advantage of the poster book is that in the case of a student doing a homestay, it can be a nice gift to present to the host family. See Appendix 1 for an example of a finished poster book.

In addition to the conversation topics listed above, there are also certain specific situations where students will be expected to communicate in the target language. If asked to think about it, students can usually come up with a long list of these situations on their own: ordering food in a restaurant, asking for directions, talking to a doctor, to name just a few. The benefit of having them think of such situations is that they can begin the process of predicting the language that they will encounter when abroad, and thus prepare. For the sake of immediate reference though, the creation of a series of "situation cards" can provide students with concrete examples of target language and provide them with opportunities for practice while still in their home country. While students can come up with these topics on their own, a colleague and I have developed a series of mini samples of speech in the following categories: family, university, eating out, health, airport, hotel, shopping, and general. Each card contains the situation (in both English and Japanese) on one side, and an example of what might be said on the other. If time is available in class, these cards can be used as starters for student generated conversations. This allows the teacher to monitor the output to see if the exchange truly follows its expected course. Feedback

given to students can then help them more accurately understand the context of a given situation. Appendix 2 shows an example of the front and back of a situation card.

While this kind of preparation can be a great help to students, and a confidence booster, it is impossible to prepare them for every speaking event they might be exposed to. Therefore, it is also important that they understand various communication strategies that they can use to help negotiate meaning. By teaching them how to ask for clarification, how to get someone's attention, and how to keep a conversation from coming to a dead stop when they don't understand, students will be more able to participate in a wide variety of speaking opportunities. Furthermore, especially with Japanese students, who often have a binary attitude about communicating in a foreign language (understand = continue conversation vs. not understand = say nothing), it can be very helpful to teach students the importance of using their imaginations when trying to communicate. Imagination might help them strive for a new way to communicate something they can't say directly, and help them guess on the meaning of unknown words. By using their imaginations, students come to understand that a lack of understanding does not necessarily have to be the end of a conversation. An example of an activity that can help with developing this skill might be along the lines of the teacher saying, "Please answer the following question: blah blah blah blah **brother** blah?" In this situation, all of the words but one are gibberish. The intended lesson for students is that even if they can only pick out just one word from a question, they can use their imaginations to guess what was being asked, and then form an answer:

"I have an older brother."

"My brother's name is Kenichi."

"I don't have a brother."

"My brother is 21 years old."

If the answer is right, great, but what students are often unaware of is that even if the answer is wrong, that is also great. By saying nothing, the conversation is likely to stop, but if they give the wrong answer, the questioner is likely to either repeat the question, or initiate a new conversation based on the previous answer. Another question that is fun to practice in class is, "blah blah blah blah blah blah blah?" That can lead to many interesting conversations!

### 3.2 CULTURAL MATTERS

The term "culture shock" is often bandied about, and while its meaning is generally understood, students often have only a vague idea of what "culture" actually is. For the most part, their preconceptions are usually generalizations and stereotypes. It is important to emphasize to students that culture encompasses all aspects of a people, their daily lives, and their interactions, not just easily visible things like traditional dance or clothing. One way to get this message across is to use the visual of an iceberg to explain that culture goes much deeper than just what can easily be seen on the surface. The importance of examining connections between surface and deep culture will help students in the process of crossing cultures. As they will be experiencing this culture first hand, it is hoped that they will be aware of the small details of deep culture and be fully able to appreciate that not only groups of people, but also individuals in those groups have their own unique culture. The poster books mentioned above can be used to help drive this point home. When students examine

their own lives and environment, they can come to see how much of what they experience is influenced by their own Japanese culture.

That said, before departure, students should be made aware of the more obvious social do's and don'ts. Making them aware that norms involving acceptable clothing, eating habits, bathing habits, smoking habits, etc., could be quite different from "back home," could help them better fit in upon arrival, or more important still, not cause offense. While they should try to learn about these things before they go, it is also important that they learn how to observe others. "When in Rome, do as the Romans do" only works when one actually observes what the "Romans" are doing. Games like *Barnge* (<http://www.thiagi.com>) and *Bafa Bafa* (a Google search for *Bafa Bafa* will provide many examples) can provide good training for both communication strategies and cultural awareness.

Another area of consideration is that of Pop Culture. Things like current movies, tv shows, music, and celebrities are often the conversation topics of "today." By having students research who and what is currently popular, they can become more familiar with what they will likely be exposed to in the foreign country. Students should be encouraged to take advantage of websites such as YouTube to expose themselves to such pop culture. By acquiring this type of background knowledge before arrival, they will be more able to participate in a wider variety of social interactions.

While one of the goals of pre-departure training is to allay student fears, an important subject to cover is that of personal safety. It is sad to say, but in the world we live in, there are some who will prey on a foreign student's lack of awareness of cultural norms. One aspect of culture that can leave students particularly vulnerable is that of touch. Japan is a society where there is usually little to no physical contact between family members. This is often different from many families in western countries where hugs and other forms of physical touch among family members are quite common. Although it might seem like common sense, students are often unaware of what kinds of touch might be considered acceptable or unacceptable. In order to minimize, or more hopefully, completely avoid such problems, different kinds of hugs or caresses should be demonstrated. Students should never be in a situation where they are being touched, and they think, "This is kind of weird, and I don't really like this, but perhaps this is the culture of this country/family, and I don't want to be rude by saying 'stop.'" They need to know that if they think a touch is "uncomfortable" or "weird", that they should trust their instincts, say, "stop it," and then tell someone in a position of authority. Do to the uncomfortable nature of the subject, students are more likely to confide and seek advice from their friends or classmates. Unfortunately, friends or classmates often don't know how to respond because they too are not native to the culture. I know of one case where after continually being touched inappropriately, a student consulted with her friend for almost a week before the friend finally told her to talk to someone in authority. In the event that students ever need help in such a situation, make sure they know who to contact, and how to contact that person. This information cannot be stressed strongly enough.

### **3.3 PRACTICAL MATTERS**

This area of preparation encompasses the types of questions that students might have about the concrete aspects of their trip. In this area, the focus tends to be on departure and arrival procedures, money, transportation, local geography, and problem solving.

Preparing for departure can be a very stressful situation for even the most seasoned of travellers. For my students, many of which have never been away from their families, let alone traveled to a foreign country, this can be a particularly rough time. Therefore, suggestions on preparation can be especially helpful. Basic tips such as creating a packing list: deciding exactly what to bring, and checking it off the list as it is packed can help make this process a smooth one. Also, explaining airline baggage rules, carry-on restrictions, and other airport procedures such as check in, immigration, boarding, customs, transportation to and from the airport will take some of the fear out of the unknown.

Another big concern of students is money, especially the question of how much they will need. While the answer to this question has many variables, for the most part, in the programs I am involved with, their program fee has covered room, board, and education. By explaining that they will always have a roof over their heads, and food in their bellies, the question of money becomes less of a major concern. If possible though, it is beneficial to survey students who have previously participated in the study abroad program to see how much money they used, and in what ways they used it, and then inform the current students. In some cases, students might benefit from a little advice in how to spend their money. In a recent program, I had one student who told me she was thinking about renting a portable wi-fi hotspot device. I pointed out that the price of using such a device would be the equivalent of about 30% of the money she planned on taking. When asked if she really needed to be connected to the internet 24/7, or if she would rather have more money to spend on activities and other things while abroad, she decided free wi-fi would suffice.

Though short term study abroad students might not have to concern themselves with opening a bank account in the host country, long term students might. Therefore, they should be made aware of the difference between a savings account and a checking account. For my students, it is recommend that they open a bank account in their home country (in this case, Japan) that is affiliated with an international ATM system such as Plus or Cirrus. This gives them the ability to withdraw cash in the local currency directly from their Japanese bank accounts. It also provides an easy way for family back home to add more money to the account in case a student runs low on funds.

When it comes to money, students should also be made aware of how money is used in the host country. This includes teaching them about the different denominations used (including the names of the coins and bills), how to handle money safely, and expectations of change, etc. Students are most likely unaware of the fact that they might meet with some resistance if they try to use a \$100 bill to pay for a \$1 bottle of water at the local convenience store. An explanation of the tipping culture of the host country should also be included in pre-departure training when money issues are being covered.

If possible, transportation and local geography should also be explained in pre-departure training. Looking at maps of the target area will help students quickly

orient themselves when they arrive. Western addresses that use sequential numbering and street names might be a new concept to many students. Map reading tips, and learning how to use cross streets and intersections as reference points can help students when asking for and receiving directions. Getting lost is a real fear, but in actuality, being totally lost is a very rare occurrence. If students can learn certain main reference points (this street runs to the harbor, which is to the east, or that street passes the big shopping center, etc.), they can develop an awareness of an area that does not require them to be able to pinpoint their location at any one time. Most students have smart phones, and while they might not be connected to the internet while abroad, they can still serve a useful function. In their home country, have students access maps of the place they will be going. They can then take screen shots of that place at various degrees of scale, and thus, always have a map when needed.

When it comes to getting around, examining how the public transportation system works and the hours it runs will help students quickly adapt. Informing students about fares and fare rules, and whether or not they should buy monthly passes, ticket books, or individual tickets can help them prepare mentally (and financially) for getting from Point A to Point B. Furthermore, showing them how to identify different buses or bus stops allows them to know what to expect when they are ready to ride. Teaching them to use Google maps (<https://maps.google.com/>), which at least in North America, can give precise instructions on getting around town using public transportation, is another great tool.

While there are many other practical matters that could be covered, it is impossible to predict, let alone cover them all. Therefore, perhaps the most important skill to teach is that of problem solving. Students can be expected to face a number of crises while abroad, and a little instruction prior to their departure can help them solve many of these problems before they become major issues. It is important to teach students that many problems can be avoided by preparation, and others can be overcome if they remember to be communicative, assertive, flexible and understanding. Students should be fully aware that if they have a problem, they never have to suffer alone, and that by talking to teachers, friends, or their host family most of their problems can be solved.

#### **4.0 THE BENEFITS OF “IN COUNTRY” TASKS**

When studying abroad, students often have different expectations and ideas of what they will do once in the host country. And of course, the type of program they are participating in will shape the students' experiences. In my case, the program I am most involved with is that of sending a group of students abroad for one month. Group size usually ranges from 25 to 30 students. These are students with almost no experience of travel, and absolutely no experience of independently exploring a new place, therefore, they will often fall into the familiar patterns of home. Students can miss a lot when they bring the culture of university life in Japan with them, instead of being more open to experiencing the foreign culture of the new country of study. In the first week of one program, students were hesitant to spend \$30 to see a local landmark, but had no problem spending \$50 for a sushi dinner. Therefore, to help them prioritize better ways to use their time and money, it can prove beneficial to assign them experiential tasks beyond their daily language studies.

## **5.0 THE GOALS OF “IN COUNTRY” TASKS**

Even Einstein once commented on that peculiar aspect of time, in which it seems to pass all too quickly when one is having a good time, and usually, thankfully, students have a fantastic time when they are abroad. However, when they return to their home country, students are often left with an overall impression of “that was great,” but as time passes, they have no clear evidence, or even clear memories of what it was they experienced. The goals of assigned “in country” tasks are two-fold:

1. Require them to experience a certain threshold of new activities.
2. Record and reflect on these activities.

It is hoped that by completing these tasks, students will be able to preserve clear timeline of their experiences while abroad.

### **5.1 “IN COUNTRY” TASK: RECORDING A DAILY MEMORY**

The goal of this task is not to create a diary, but rather record one clear memory every day while abroad. Students are told that every single day must have one happening that is worth preserving. This happening can be anything from an event, “I went to a party today,” to a feeling, “I was really nervous today.” The point is to record enough details of that occurrence to paint a vivid picture of it so that others can understand it as well. In my case, the students are of extremely low English level, so I have them write down this memory in a notebook in Japanese. This will form source material for the project I have them work on upon their return to Japan. (See Section 7.1) The reason I have them write in Japanese is that I don’t want to make this part of the project too difficult. By writing in Japanese, this task should not take more than 10 or fifteen minutes a day, if that much.

### **5.2 “IN COUNTRY” TASK: SUPPLEMENTAL NOTES**

In addition to the daily memory, students are also given different short answer questions throughout the program. Some of these questions are “time sensitive”, such as: What was your first impression when you met your host family? As with the daily memory, it is the details that make this answer interesting, so this question must be asked/answered the day of arrival. Again, students are allowed to write in Japanese because at that point in time, it is the information that is important, not the language it is recorded in. Other questions might be along the lines of:

- What was your most interesting lesson this week?
- What was your biggest challenge during the first week?
- What is the biggest difference between studying English here vs. in Japan?

Students are also required to keep a record of where and how much money they are spending from week to week. In addition to preserving information, this can task can also help students be more aware of just how much and how quickly they are spending their money. Important knowledge when one has limited funds.

### **5.3 “IN COUNTRY” TASK: ACTIVITY CHECKLIST**

(see Appendix 3)

In order to push students to try new things, and reflect about them, students are required to record data about their experiences with the following subjects:

- Food

- Sightseeing
- Shopping
- Things to Do (other activities that are not necessarily included in the above)

For each of these topics, students need a record of such information as the name, location, ticket prices, menu items, other related information, and of course, their own impression of the place or activity. As my program is 4 weeks long, I assign eight listings for each category (or 2 per category per week). As most of this information can be preserved with a few photos (photos of restaurant name, menu, interior, and food can provide the required details for 1 food experience), it is not necessary for the students to write all of that down in their notebooks. Rather when they have the information recorded, they may simply check it off of the checklist. The notebooks/checklist are also used for students to record information about public transportation, observations of cultural differences, and a list of at least 2 new vocabulary words/phrases per day.

## **6.0 THE BENEFIT OF ADDING POST STUDY ABROAD ELEMENT**

The chance to study abroad is a wonderful opportunity for students. While abroad, they have improved their language skills and truly immersed themselves in the culture and daily lifestyle of a foreign country. But what happens to them upon their return to their home country? All too often, they are welcomed back to their home universities, and simply re-enter their usual classes. Unfortunately, they rarely get the opportunity to formerly reflect on their experience or produce anything tangible that shows what they accomplished during their time abroad. Without such an opportunity, any emotional growth or sense of expanded global awareness is likely to fade from the students' minds. The benefit of adding a post study abroad element is that it allows students critically reflect upon the time they spent abroad.

## **7.0 THE GOAL OF A POST STUDY ABROAD ELEMENT**

As stated above, students rarely have the opportunity for a formal debriefing upon their return to their home country. The goal of a post study abroad element is to give students the opportunity to do so. By producing a comprehensive document that covers all aspects of their experience, students are able to fully account for their time abroad. When done well, this document can serve three purposes and three different audiences. For the teacher, it can show that students truly exposed themselves to different aspects of the foreign environment, and can show how culturally aware they were. For the students themselves, this project documents their time abroad, and whenever they happen to glance at it, even years later, it can serve as a time capsule of sorts. The third audience it serves is that of future students preparing to study abroad. This document can give such students some insight as to what to expect when they are abroad. It can give them ideas of places to go and things to do, and by seeing how much money previous students spent, they can be better informed when planning their own budgets.

In the program I am associated with, students have a required class in the spring that serves as a full semester of pre-departure training. They then spend 4 weeks of the summer abroad. In the fall semester, they have another required class that is based on their time abroad. Past experience has shown me that attention, effort, and attitude peak in the pre-departure sessions and while abroad, and then, upon their return to

Japan, rapidly dwindles with every passing week. Students can see the necessity and benefit of the pre-departure training, but lose interest after the event. In order to make the fall class meaningful to the students, it is critical that it be tied to the experiences they had while they were abroad. This is where the “in country” tasks come into play. Unless students have recorded the data required while in the foreign country, they will be unable to complete the post-study abroad project.

## **7.1 POST-STUDY ABROAD PROJECT**

As stated in the discussion on “in country” tasks (Section 5), students are required to keep a notebook where they record a daily memory and answer questions about different aspects of their experience. Furthermore, they are required to collect data and make observations about a variety of things. No English was required in the collection of that information. It is in this class where they are tasked with putting all of that information in English.

To keep the students focused on the task at hand, and to make sure all of the students will produce a finished product in the same format, I have produced an MS Word template that the students work from. See Appendix 4 for an abridged version of this document. All students receive a copy of the template, and then spend the semester filling in the different sections. The advantage of producing a template is that students do not need any particular skill with computers in general, or MS Word specifically. Aside from clicking to choose where they will input text, the only other skills they need are the ability to copy and paste photos.

Including a cover page and a table of contents, the template I produced is 49 pages long. It is divided into 8 sections as follows:

### **Part I: Homestay**

- 1) First Impression of Homestay Family
- 2) Description of homestay family
- 3) Five things I really liked about my homestay experience
- 4) Five things I didn't really like about my homestay experience

### **Part II: Simon Frasier University**

- 1) First Impression of Simon Frasier University
- 2) My weekly schedule
- 3) Description of my favorite class at SFU

### **Part III: My Calendar**

- 1) Detailed description of daily memory
- 2) List of my BEST 5 memories

### **Part IV: Money**

- 1) Week by week account of money used
- 2) List of things I bought for myself
- 3) List of things I bought for friends and family

### **Part V: Getting around**

- 1) Bus

- 2) Seabus
- 3) Skytrain

#### Part VI: Life in Vancouver

- 1) My favorite things
- 2) Surprising Canada

#### Part VII: Travel Guide

- 1) Food
- 2) Shopping
- 3) Sightseeing
- 4) Other Activities
- 5) Useful Vocabulary

#### Part VIII: Back in Japan

- 1) My feelings about returning to Japan
- 2) The things I did when I got back to Japan

A schedule is made for the 15-week semester, and every week, and as homework, students work on specific sections. And the end of each class, they do a **SAVE AS *Name Date.docx***, and submit the files electronically. This way, the teacher can keep track of students' progress throughout the semester in addition to being able to provide feedback.

Once completed, the document can end up being 60 or 70 pages long. It is well formatted, and in addition to recording students' thoughts, memories, experiences, etc., it is also filled with a variety of photos, making it colorful to look at. Students really feel a sense of accomplishment after producing a file that long. When printed and bound, it can be placed on a bookshelf at home as a permanent record of their time abroad.

A note to teachers who might incorporate this project: As the weeks progress, and students add more and more photos, it is important to pay attention to file size. I have seen files grow to over 100 megabytes. Once a file exceeds a certain size, MS Word will save it, but once closed, it will refuse to re-open it. Reducing the file size of the inserted photos can easily solve this problem. Also, as students should be saving different versions of the file every week, in the event there is a problem with the current file, it should be possible to access the previous weeks' file.

## **7.2 POST STUDY ABROAD PRESENTATIONS**

By default, the project mentioned above is based on writing. In order to incorporate a speaking element to the class, students are also required to make presentations about their time abroad. This is a relatively simple task to prepare: students are told to make a PowerPoint file consisting of 11 slides. One slide is the title slide, and the rest of the slides are made up of a heading and a single photo. The only requirement is that of the 10 photos, the student making the presentation can only appear in one of them. Without that caveat, at least in Japan, students tend to choose 10 pictures of themselves gesturing "peace". In terms of PowerPoint, the file takes very little time to make. As it is an assignment, all students are required to submit the PPT file at the

same time. Then, throughout the semester, 2 or 3 students are chosen each class to make their presentations. They are to tell the story of the photo: where, when, what, etc., and the audience is then encouraged to ask the presenter questions about his or her activities.

## **8.0 CONCLUSION**

With this paper, it is hoped that educators will come to realize that a study abroad program should involve much more than just providing students with the opportunity to spend time studying in a foreign country. Pre-departure training in communication skills, cultural matters, and practical matters can help students be better prepared to smoothly acculturate. “In country” data collection assignments can provide students with the incentive to go out and try new things. Furthermore, having to record that data, as well as information such as a daily memory, and cultural differences will force them to reflect on their time and experiences outside of their language classes. Using the information the students collect while abroad in a final project to be developed after they return to their home countries can help condense and codify the experience and the memories into one document, which can serve as a treasured memory for the student who went, as well as serve as a kind of tool to help future students prepare for their own programs abroad. By enhancing a study abroad program in such a way, students can do much more than simply study. They can open their eyes, and truly experience being abroad.

## **ACKNOWLEDGEMENT**

The author would like to offer his heartfelt thanks to Professor Todd Thorpe of Kinki University. He was my co-author on an earlier paper on improving study abroad programs. And over the years, his keen insight and passion for teaching have helped me further develop and refine the enhanced program presented before you today.

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Appendix 1: Poster Book Example (Topic: About Me)

**My Personality**

**Shy**  
 I am very shy. I don't like to be in the center of attention. I always have a shy smile. I don't like to be the center of attention. I don't like to be the center of attention.

**Jealous**  
 I am very jealous. I don't like to see my friends with other girls. I don't like to see my friends with other girls. I don't like to see my friends with other girls.

**Relaxed**  
 I am very relaxed. I don't like to be stressed. I don't like to be stressed. I don't like to be stressed.

**MY ROOM**

My room is very cozy and comfortable. I like to have a comfortable bed. I like to have a comfortable bed. I like to have a comfortable bed.

**LOVE WORD youth**

**OTHER**

I love to visit my friends and family. I love to visit my friends and family. I love to visit my friends and family.

**ABOUT ME**

**LIKE**  
 I like to eat fruit. I like to eat fruit.

**DISLIKE**  
 I don't like to go to school. I don't like to go to school.

**I WANT**  
 I want to go to Hawaii. I want to go to Hawaii.

**I WANT TO GO TO HAWAII**

I want to go to Hawaii. I want to go to Hawaii.

## Appendix 2: Example of a Situation Card

Front of card explains the situation in Japanese and English

洗濯をどのようにすればいいかをホストファミリーに聞きたい場合

You want to ask your host family how to do your laundry.

Back of card explains what you would say in that situation

I'd like to do my laundry. When you have time could you show me how to do it?

## Appendix 3: In-Vancouver Checklist

(As a lot of this information can be collected by taking pictures, students simply need to check off the information they have)

In Vancouver Research:  
Name: \_\_\_\_\_

**+** Food (restaurants, snacks, street food, coffee shops, etc.):

	Food 1	Food 2	Food 3	Food 4	Food 5	Food 6	Food 7	Food 8
Date:								
Name								
Address								
Hours:								
Sample Menu items								
Prices								
Your Impression								
3+								
Pictures								
+ alpha?								

□

Shopping (stores, malls, neighborhoods)

	Shop 1	Shop 2	Shop 3	Shop 4	Shop 5	Shop 6	Shop 7	Shop 8
Date:								
Name								
Address								
Hours:								
Sample items								
Prices								
Your Impression								
3+								
Pictures								
+ alpha?								

Things to do (Other activities, not listed on this paper)

	TTD 1	TTD 2	TTD 3	TTD 4	TTD 5	TTD 6	TTD 7	TTD 8
Explanation								
\$ & box to get there								
+ alpha.								

Sightseeing (should be major sightseeing locations)

	SS 1	SS 2	SS 3	SS 4	SS 5	SS 6	SS 7	SS 8
Date:								
Name								
Where								
Hours:								
Explanation								
Prices								
Your Impression								
3+ Pictures								
+ alpha?								

Transportation: (think of all the questions you have about how to use public transportation. Be prepared to explain the system with words AND Pictures.

Bus	Seabus	SkyTrain
-----	--------	----------

ENGLISH: Use this notebook to make 2+ entries every day. Could be Vocabulary, Phrases, or anything else:

S/4	S/5	S/6	S/7	S/8	S/9	S/10	S/11	S/12	S/13
S/14	S/15	S/16	S/17	S/18	S/19	S/20	S/21	S/22	S/23
S/24	S/25	S/26	S/27	S/28	S/29	S/30	S/31	S/32	

Surprising Canada and Culture: In this section of your notebook, you should write down anything you see or do that makes you think "Wow, we don't have this (do this) in Japan!"

Take notes and pictures if possible

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15

**During these 4 weeks, you will experience many new and interesting things. It is important that you take notes and pictures so you do not forget them!**

## Appendix 4: Abridged version of Post-Study Abroad Project

### Part I: HOMESTAY

Homestay Photo Here

First Impression of my Homestay Family:
The People in my Homestay Family:
The 5 things I really liked about my homestay experience:
The 5 things I didn't really like so much about my homestay experience:

### Part II: Simon Fraser University

SFU Photo Here

#### Class Schedule:

Day	Class 1	Class 2	Class 3
Mon.			
Tues.			
Weds.			
Thurs.			
Fri.			

First Impression of SFU:
My favorite class at SFU:

(My Calendar should reflect every day)

### Part III: My Calendar

Photo Here

August 5, <del>Sunday</del>
August 6, <del>Monday</del>
August 7, <del>Tuesday</del>
Etc.
Of all of the things I did, these are my BEST 5:
Best 1:
Best 2:
Best 3:
Best 4:
Best 5:

### Part IV: Money

During my 1 month in Vancouver, I spent a total of **Y HOW MUCH MONEY?**  
Here is how I spent it:

Week 1 Money:
Week 2 Money:
Week 3 Money:
Week 4 Money:
These are things I bought for myself:
These are things I bought for my family and friends:

Suitcases on August 5: \_\_\_\_\_ kg

Suitcases on September 2: \_\_\_\_\_ kg

## Part V: Getting Around

Transportation Photo Here

Bus:
Seabus:
Skytrain:

## Part VI: Life in Vancouver

Here is a list of my favorite things in Vancouver:

Favorite Food Photo Here

Favorite Store Photo Here

Food, Sightseeing, Shopping, and Things To Do would all reflect a similar format:

### Surprising Canada:

Here is a list of the things that surprised me about Canadian Culture

Surprising Canada:	How Japan is Different:
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	

### Part VII: Travel Guide Section 1: Food

#### Food 1: Name

Address: Corner of Yew St. and Cornwall Ave

Food photo here:	Food photo here
Directions:	Food photo here
Your Impression:	
Menu items & Prices	Menu items & Prices

## Useful Vocabulary

(Vocabulary words & phrases you learned during your stay)

	English	Japanese	Situation
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

## Part VIII: Back in Japan

On September 2, 2102, I flew back to Japan. On that day, \_\_\_\_\_% of me wanted to stay in Vancouver, and the other \_\_\_\_\_% of me was ready to return to Japan.

Japan Firsts:

The first food I ate:
The first activity I did with my family:
The first activity I did with my friends:
The first thing I missed about Canada:

Team Building for Global Citizenry

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## Abstract

Based on research conducted at the elementary and middle school levels, a University teacher education preparation program, a University counselor education preparation program, as well as experience working in various individual, organizational, and governmental areas of conflict resolution, this panel of presenters will provide an interactive session focusing on innovative teaching for collaborative systems; conflict coaching for cooperative learning and effective problem solving; and, constructive engagement in a global society. A framework of skills and strategies will be provided to work in a variety of educational settings.

The research conducted by Dr. Lane at the elementary level has demonstrated a parents' desire to have their children engage in conflict resolution as part of the transition into kindergarten. Parents were generally satisfied with their engagement in the transition process and the introduction into formal schooling; however, parents indicated a significant desire for both social and behavioral support of firstborn children as they transition into formal schooling. Nearly a third of parent participants responded they would have liked more information on both academic and behavior expectations prior to school. An open ended question to see how to better meet the needs of future parents as they transitioned a child into school indicated that the majority of participants would like information on how to teach pro-social behaviors and instill conflict resolution strategies in their children. Thus, the desire to instill cooperative learning skills and build constructive engagement in a global society is evident in families and in our youngest of students.

Additionally, Dr. Lane's work in educating teacher candidates in both Educational Psychology and Interpersonal Relations in the schools demonstrates that pre-service teachers' greatest fears rarely come in content knowledge or one's ability to teach, but rather productively working with various stakeholders in the education realm. Students, parents, colleagues, administration, and the greater

community pose many opportunities either gained or lost through communication. Providing educators with conflict coaching and innovative skills and strategies to work with a variety of individuals seems imperative to an educator's success in the field. Opportunities for an overall reduction of conflict, reduced student bullying, along with greater teacher retention and longevity seem feasible if we empower educators with the tools they seek to be stronger problem solvers creating collaborative systems.

Dr. Frost's research of prevention programs used to reduce school violence at the middle school level has found bully prevention programs are not achieving the desired effect. This research project surveyed 231 schools with 122 responses returned. The schools provided information with regard to the type of prevention programming, how the programs were administered, and how many times per year the programming was delivered and by whom. The only significant finding related to schools that had a counselor to student ratio of less than 1:500. These schools reported significantly fewer out-of-school suspensions (injury and non-injury) than those schools with a counselor to student ratio of more than 1:500.

As an educator of school counselors, Dr. Frost feels it is important to look at the role counselors play in delivering prevention programs and to use their time effectively to deliver services that truly make an impact. The need for additional prevention programming is recommended to provide life skills in the area of conflict resolution, which will enhance what the current bully prevention programs are teaching. Conflict dynamics are important for the teen population to understand and learn to better facilitate the building of problem solving skills within relationships and for future professional interactions as they move into the work force beyond their formal schooling. Preparing students to work in a global society requires the ability to see issues from different perspectives and work effectively in collaborative systems.

Considered a “pracademic,” McCants’ work is dedicated to the theoretical understanding of conflict in conjunction with the attention to skills, intervention, and practice of managing conflict constructively. She draws from several pedagogical insights when creating space for collaborative efforts among individuals and groups of people both domestically and internationally. Each individual’s manner in which they engage in conflict is developed over a lifetime and is influenced by individual differences, skills, competencies, and, culture and group identity. Learners at all levels need to be both supported and challenged as they embrace processes of collaboration. Learning conflict resolution cannot simply be about attaining a subject matter, but rather needs to include an experiential learning component in order for behavioral and attitudinal change to take place. Conflict-competent leaders, team members, family members, and global citizens also need practice and space in which to reflect on their choices and feedback for improvement. The elementary frames of collaborative processes need to be broad enough to share across systems, and yet allow for the more ethnic frames relating to context. Finally, it is critical to provide environments in which new skills can be fostered, coached, and practiced – it is simply inadequate to make the learner aware of what they don’t know or what they can’t do – they must take the path of mastery.

The goal is to have open dialogue with other educators and practitioners in the field to learn from one another and improve upon what is currently being done in the school environment, but also to look beyond the school environment to improving communications more globally.

## UP AND OVER: A NEW RESOURCE TO GUIDE EARLY CAREER HIGHER EDUCATION TEACHERS

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### Abstract

*Increasingly, the landscape of higher education today is peopled by teachers who run the gamut of career academics to those recruited for their expansive research, commercial, industry and technical expertise – regardless of teaching experience. Casualization and contracting of sessional educators is a further cause of delayed access to formal preparation for higher education teaching. In New Zealand, this is particularly prevalent in polytechnic/community college and vocational education environments. The same sector is also characterised by massification and a highly diverse student body, incorporating first-in-family, second chance and other non-traditional learner groups. Academic leaders and faculty developers charged with preparing effective early career educators for the challenges of the twenty-first century learning environment require professional development tools that deliver practical and useful guides. Goalposts is a newly developed resource which aims to distil the complex theories and practices that underpin the pedagogy of higher education teaching. It is arranged as a series of ten one-page summaries of commonly agreed principles, supported by a glossary and examples of practical implementation. This presentation will share the six year journey which has developed first, a resource we call Signposts which outlines learning and teaching strategies, and now, Goalposts, which focuses more on the scholarship of teaching and learning. These resources were commissioned by our National Centre for Tertiary Teaching Excellence, are freely available through their website, and have been among their most downloaded products. An important feature of the resource is its positioning in New Zealand's unique dual heritage culture and society. We explain how using Goalposts will support faculty developers and new teachers: design effective learning activities underpinned by theory; offer a resource for reflecting on and developing practice; and provide a starting point for further reading and study about learning and teaching.*

### Introduction: Why the need?

In New Zealand, higher education has many faces. Our eight universities, the youngest of which was established as recently as 2000, account for 33 percent of our post-secondary students. The remaining two thirds are dispersed between 18 institutes of technology and polytechnics (ITPs), two colleges of education, three wānanga (a publicly owned tertiary institution that provides education in a Māori cultural context) and an ever-changing array of private training establishments (PTEs), with 604 registered at the time of writing. Clearly there will be a correspondingly wide range of subject, level and quality within the courses on offer.

This diversity is further compounded by the lack of a formal qualification, accreditation or registration framework for higher education professionals. Although primary and secondary teachers in our compulsory sector are required to successfully complete programmes in educational theory and practice, tertiary teachers have no such legal requirement, the only constraints being an organization's policies and procedures. It is increasingly common therefore, for our classrooms and lecture theatres to be addressed by newly recruited educators who may have a wealth of subject-matter expertise, but little or no background in lesson planning, classroom management, or other pedagogical knowledge.

Teaching has a reputation as one of the more stressful professions. Forty-one per cent of teachers report high levels of occupational stress compared with 31 per cent of people in nursing, 29 per cent in managerial jobs and 27 per cent in professional and support management occupations (Milburn, 2011). In a recent Australian study (Richardson & Watt, as cited in Milburn, 2011) it was found that between 25 and 40 per cent of teachers leave the profession within five years of starting, and "Poor pay is not the reason they're giving for leaving the profession: it's the workplace issues of highly stressful, poor working conditions" (p. 1). Further, many of the teacher recruits planning to quit were people who had experience in other professions. The same article describes a burnout inventory applied to early-career teachers in a longitudinal study which identified that even people who had been teaching for

two years had highly elevated levels of emotional exhaustion. If we add to the impact of this negative experience for the individuals, by considering that the cost of replacing a worker is three times their annual salary, clearly it is in the best interests of education providers at all levels, to protect their investment in talent recruitment and training.

Herein lies the tension: financial pressures frequently deny front-end training and a gentle introduction to the role; credibility requires instructors who know what they are talking about, and have first-hand knowledge of the workplace beyond academia; yet the institutes must value quality teaching. Many providers address this issue through internal professional development programmes for their educators, such as inductions, workshops, and certificate/degree programmes. However, a central problem of accessibility remains, when format and timing cannot always be aligned with starting dates or the individual's preferred approach to learning (see Honeyfield & Fraser, 2012 for an extended discussion). It was into this gap – this need for a just-in-time, focussed and accessible guide for higher education teachers in their first few weeks on the job – that the *Signposts* and *Goalposts* resources were born.

### **Six years in the making**

Improving the quality of teaching has become a high priority, both on an institutional and a national level. In 2007, New Zealand's Ministry of Education established Ako Aotearoa, The National Center for Tertiary Teaching and Learning Excellence as a specialist body to fund research related to teaching and learning. A Creative Commons publishing platform and a national register of educational research facilitates the sharing of ideas and learnings across the breadth of the sector (<http://ako.aotearoa.ac.nz/>). An apt name indeed: "Aotearoa" is the Maori word for New Zealand: literally "land of the long white cloud", and the concept of "ako" means both to teach and to learn, with an emphasis on reciprocity and shared learning experiences.

The *Signposts* and *Goalposts* resource development projects described in this paper received three funding grants from Ako Aotearoa: first in 2008 to conduct a needs analysis for novice teachers, review existing options and develop the *Signposts* resource; second, one year later, to conduct a national evaluation of the resource, assessing its usefulness and current applications, and identifying strategies for its expansion and improvement; and third, in 2012 to develop a follow-on resource, *Goalposts*, to provide an introduction to the theories and principles underpinning adult learning and education. Each phase has been subject to rigorous peer-review as well as field pilots with the target audience of new teachers, and with staff developers and academic advisors whose role it is to support, mentor and sponsor teaching capability.

In addition to "quality", a central tenet of Ako Aotearoa's vision, and of our own pledge as a recipient of their support, is collaboration. Accordingly, the project was conceived from its very beginning as an inter-institutional collaborative process, conducted with deliberation and forethought, as "genuine partnerships, characterized by respectful and critical dialogue" (Gewirtz, Shapiro, Maguire, Mahony & Cribb, 2009, p. 567) to make outcomes meaningful and productive for all participants. Drawing on a national association of staff developers, we began our partnership with eight team members from three institutions, but by the evaluation phase of the project, other colleagues had expressed an interest in participating, and the project team expanded to include staff development representatives of five ITP institutions. Over the six years, further changes occurred with retirement, job loss and role change, so that the new team assembled to write and review *Goalposts* in 2013 had just three original members among its 13 contributors, but our spread now encompassed eight organisations, with universities and PTEs represented alongside ITPs.

### **The research process and the first resource: *Signposts***

The original project began when a group of staff developers first mooted the idea of an inter-institutional resource which would assist new tertiary teachers in their first one – two months in their role. Sharing good practice from their own institutions, the team agreed that beginning staff needed a great deal of support and information provided in simple, usable 'chunks'. Two separate literature reviews were conducted – one on new tertiary teacher professional development options and the other on inter-institutional collaboration. A methodology of action

research enquiry was decided upon, since we wanted to be able to monitor, scrutinize and adjust our collaboration as the project was underway. The action research process is usually described as a cycle which allows practitioners to test ideas and concepts as they provide opportunity for feedback through the four phases of planning, acting, observing and reflecting (Ellis, Armstrong, & Ground-water Smith, 2010). A useful and frequently cited description of this approach is offered by Kemmis and McTaggart (1988), who explain that:

Action research is a form of collective self-reflective inquiry undertaken by participants in social situations in order to improve the rationality and justice of their own social or educational practices, as well as their understanding of these practices and the situations in which these practices are carried out (p. 5).

Alongside the literature reviews, a number of professional discussions were held within the team itself, and also with our wider community of practice, examining learning and teaching, the context of tertiary education, student profiles, teaching roles, teacher and student centred perspectives, and the attributes and skills of good teachers. Eventually we decided a format for the *Signposts* resource of 10 one-page topics with tips and techniques, covering:

- Planning to teach
- How to get going with your class
- Engaging your students in their learning
- Classroom management
- Delivering the goods
- The language of assessment
- Reflecting on teaching
- Knowing about and responding to difference
- Being professional
- Literacy integration

A first draft of *Signposts* was presented at the HERDSA (Higher Education Research and Development Society of Australasia) conference in July 2008, piloted, then disseminated within the three project member institutions, and then posted on the Ako Aotearoa website for national use across the tertiary sector. Feedback from the site's administrator indicated that this resource was the most downloaded document of any on the site in the first three years after the launch. Informal feedback from staff developer colleagues suggested that the resource was filling the need for immediate teaching and learning tools experienced by staff new to an education environment.

Comments from users included:

*Very appealing. Using the columns, I am more inclined to read it*

*The language used is clear and understandable without 'jargon'*

*As a new tutor, I feel a bit overwhelmed by all the information that I have to read and know – it was very nice to read this document and I know it will come in handy for referring back to – thank you*

*Signpost 6 has a website noted that I will investigate. Being made aware of other documents within the Signposts, e.g. Quality Management, I found very useful.*

In addition to the success of creating *Signposts*, we set out to chart the progress of this collaborative project with the intention of developing insights to inform our on-going collaboration and resource development, and also be of value to other colleagues engaged in similar inter-institutional projects. A secondary aim, therefore, was to develop some guidelines for inter-institutional collaboration for staff development. A key tool was the Wilder Collaboration Factors Inventory (Mattessich, Murray-Close & Monsey, 2001). Readers who are interested in a detailed description of the research and/or the collaboration process can find more about these in Honeyfield and Fraser (2012).

The next phase of our research journey, supported by a second funding round, was a collaborative national evaluation of *Signposts* to determine its usefulness and current applications, and identify strategies for its expansion and improvement. At this still early stage in the life of Ako Aotearoa, few of the new resources available through their website had been subject to any formal evaluation process. Therefore, an added benefit of this project would be to provide a methodology which could be of interest to other teams involved in teaching and learning resource evaluation. Accordingly, an e-evaluation tool was developed and promoted through staff developer networks and communities of practice.

Feedback from staff developers, academic advisors and human resource staff included the following comments:

*It will be excellent for our vocational tutors (boat building) to give them teaching awareness and skills. They will be able to move away from 'transmission-only' teaching styles and have a more engaging and inclusive style. The level is pitched perfectly - it is very clear and accessible, and the Literacy integration page at the back isn't daunting / scary, it has practical suggestions for tutors to use. I think is an excellent resource (sic). Thank you to the designers!*

*It is clear and direct and purposeful and provides a good starting point for practical 'tips'*

*I like the fact that it covers everything in not too much detail at first as there is so much to learn for new staff*

*I deliver new lecturer training and am building this into my 2010 programme as a trial, I think it will be well received*

*It is part of the reading in the first course in our adult education qualification for academic staff. It is also promoted on our website...We believe it will be a very useful part of a planned induction pack for new tutors. We had a local version but this is much more professional and comprehensive.*

As well as such positive responses, a number of suggestions were received for improving accessibility and currency; many of these were incorporated in a second edition.

### **Goalposts**

Some years after the launch of *Signposts* and its proven utilisation, discussions at various regional, national and provider fora had identified a growing body of evidence that student successes were increased when teaching staff had some exposure to, and awareness of, the theoretical principles of Adult Learning (Mane & Snelling, 2011).

Part of being an effective facilitator of learning, say these authors, means understanding students and how they learn best in order to design more meaningful learning experiences for them. Most higher education professionals readily accept that teaching requires deliberate interventions to make sure that students achieve the best possible outcomes, but what exactly should these interventions should look like, and what is the basis for decision-making about this? That's where teaching theories, models and frameworks come in.

*Goalposts* was commissioned by Ako Aotearoa as a companion to *Signposts*, linking theory and practice. Where the earlier resource outlines learning and teaching strategies, *Goalposts* provides an overview of some of the key principles and theories of adult learning. Again, the concept was to provide a resource which is easily accessible through Ako's website, and which is self-explanatory and unthreatening. Distilling the large and ever-increasing literature down to the 10 one-page primers we planned to adopt to keep our presentation consistent was quite a lengthy process. Ideas about learning are continually evolving and changing, and further, many of the commentators in the field have developed their own taxonomies. For example, Knowles, Holton III, & Swanson (2005) listed six principles; Ambrose, Bridges, Lovett, DoPietro and Norman (2010), seven; Calloway (2009), eight; and Cercone (2008), thirteen. Then, as well as principles, there are concepts, models and philosophies related to adult learning. It is a vast field!

Following an extensive literature review, recurring themes and central concepts were identified and organised into the following ten topic groupings:

- Principle #1 Prior knowledge and experience
- Principle #2 Importance of culture and the NZ context
- Principle #3 Respectful partnerships and relationships
- Principle #4 Autonomous and independent
- Principle #5 Goals and motivation
- Principle #6 Relevant and practical
- Principle #7 Learning styles and ways of thinking
- Principle #8 Critical reflection
- Principle #9 Environment for learning
- Principle #10 Change and transformative learning

Our first draft of the 10 one-page primers, along with a Glossary of Terms and an Appendix of examples for practical application, was sent out for consultation within our professional community of staff developers, and we received

very detailed feedback and suggestions from 10 colleagues from a range of institutions, both national and international. This stakeholder group is the body most able to assist and direct new teachers, and therefore are the key conduit for dissemination of the resource. Representative comments were:

*What a great resource this is, especially in the minefield of 'theories' (when a significant number of new teachers here at XXX do not see why they have to even consider understanding this as it relates to and informs their practice!)*

*Cath, this is going to be such a useful book!! I want to make it a set text in XXX here—I'm a very new teacher in it, and it isn't mine, but believe this book will just be exactly what lots of us bursting into education from other disciplines need.*

*I loved the summaries on learning and think they have been superbly done. The inclusion of all the theories was a great strength, well done!!!!*

*GoalPost (sic) is really needed to transform tutors to a more creative, engaging, interactive, innovative and quality teaching in the Polytechnic for student success. This should be for everyone to get on the same page and use it for new staff as they enter ... Carry on this great piece of work so that current and new tutors are on the same page about what the words 'quality learner/student-centered and focused' really means.*

Once a series of revisions to incorporate useful suggestions from this review group was made, the resource was piloted with 10 new tertiary teachers from four different tertiary organisations as representatives of our target readership. Their feedback was consistently positive; representative comments included:

*If I'd had this from Day One, it would have given me a better idea of where to head. Suits me because I'm a self-learner, I like to go over things in my own time*

*Really good for me from the UK trying to understand Maori culture and place in things – it's all new and hard to find a good authoritative summary.*

*Looks good. Like the format, the contents. Glossary very good to have*

*Examples at the end are the most interesting for me and all new teachers probably. As new teachers we all want to make it exciting, but have no idea how.*

The final version of Goalposts was submitted to the Ako Aotearoa review panel, and following sign off, was launched at the ATLAANZ (Associations of Tertiary Learning Advisors of Aotearoa New Zealand) in late 2013.

### **Using the resources – who, when and where**

"Teaching is one of the few professions where beginners are put into the deep end, almost thoughtlessly" says Milburn (2011, p. 2), and most staff developers would recognise this as evident to some degree within their own organisations. Of course there are structured, systematic programmes that ease teachers into the complexity and diversity of their work – when recruitment and class handovers go to plan. But when they don't, we believe that the *Signposts* and *Goalposts* resources can fill the gap, and offer a useful addition to the toolkit available to new teachers, and the staff developers and teaching and learning enhancement centres which support them.

The two resources are designed to raise early career teachers' awareness of first, the day-to-day practice of teaching and classroom management, and second, the theoretical models and different schools of thought about how best to support adult learners – and why. The intention is to help staff build confidence, and to become more reflective practitioners and to build their classroom approaches on evidence from research reported in the literature. Each of the one-page guides is deliberately practical or applied: distilling and summarising important concepts, demystifying the language, and providing meaningful links and context. Yet even here, we know that many who are new to the ideas discussed, particularly teachers in PTEs and vocational training institutes, will still find this quite a lot of text to get through.

For this reason, the *Signposts* resource is accompanied by a *Guide for Staff Developers* which suggests ways that the resource(s) can be used with both new, and current teaching staff, rather than simply providing a link to the website.

Possible uses include:

- As part of an induction package
- As a conversation started with a buddy or mentor
- A set reading for tertiary teaching courses
- A discussion topic for online communities of practice
- Excerpts included as helpful tips in internal newsletters, with a link to the full resource
- Make an “effective teaching practice” book and include *Signposts* and *Goalposts*, adding examples from your organisation.

In addition, the Creative Commons licence means that users “are free to copy, distribute, display and perform the work as well as to remix, tweak, and build upon this work non-commercially, as long as you credit the author/s and license your new creations under the identical terms” (<http://akoaootearoa.ac.nz/download/ng/file/group-1387/signposts---staff-developers-guide.pdf>). We know that colleagues have added pages to cover specific technologies, activities, or techniques, and others have adapted the resource to the ethos of their organisation, for example a Bible College.

## Conclusion

The primary objective of this six year journey has been to develop, disseminate and evaluate a resource for early career teachers in higher education. While the resources were prepared to be relevant across the sector, and we have deliberately included colleagues from universities in this collaboration, it is in the contexts of smaller PTEs and ITPs that we think this resource will have the potential to be most influential on capability and capacity – where there may not be designated professional development pathways, or a staff development specialist. For this reason, we have designed quick reference guides which are brief, easily accessed and written in simple language – and which can be used by teachers directly and do not require a formalised delivery by a teaching and learning expert.

A national evaluation as well as local workshops has already established the usefulness of *Signposts* and *Goalposts* to new teachers, and those who support them. A future interest for the authors is the teaching – learning nexus, and an examination of the ways in which we may be able to track shifts in student engagement, changes in delivery approaches, and differences in classroom dynamics and interactions. The relationship between what teachers do and what students learn is complex. There are many variables that may affect student outcomes, and any intervention, such as the introduction of a new tool, will always be an indirect, two-step relationship. Nonetheless, there is widespread recognition that academic staff development programmes can improve teaching, and good teaching contributes to good student outcomes (Prebble, Hargreaves, Leach, Naidoo, Suddaby, & Zepke, 2005).

Another area which offers scope for future research concerns the benefits of inter-institutional collaboration – beyond the simple accomplishment of the task at hand. Shared resourcing is an easy sell; and few would disagree that input from multiple and diverse people and perspectives offers synergies unavailable to those working in isolation. But there are also longer term benefits to participating organisations, such as opportunities to grow new relationships, and to experience different approaches to the provision of professional development for teaching staff. For individual team members there are personal gains, growing research capability and strengthening a community of practice. Of interest, and deserving of further investigation here would be the sustainability of the immediate benefits, and the impact on the career trajectory of the new teachers and the staff developers who participated.

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## **Clinical Course Assessment: What You Didn't Learn in Your Education Classes**

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Courses with a clinical component and/or externships allow students to demonstrate the professional knowledge they have developed throughout their programs of study. In this session, we will look at how effective assessments can meet three important goals of these clinical curricula: (a) Content analysis, (b) Application of professional skills, and (c) Professional development.

Other topics such as syllabus organization and assessment techniques will also be discussed. Audience members will be given the opportunity to reflect on assessment tools such as student learning outcomes and accreditation outcomes and consider syllabus creation that links these assessment tools to the learning experiences.

The session time will be divided into five main areas:

- Definition of clinical education.
- Description of the assessment for clinical courses.
- Example of 1 programmatic assessment.
- Distinguish key components of programmatic assessments (e.g., portfolios, field experiences).
- Assistance in creation and editing of assessments.

The first four areas will be presented through PPT presentation and discussion. The fifth area will include an opportunity to create individual assessments and interactively critique other examples.

The outcome goal is to offer educators organizational measures of student learning, to measure current program assessment, and to provide ideas for authentic assessment of professional skills and dispositions.

1. The audience will be able to identify department Student Learning Outcomes (SLOs).
2. The audience will distinguish authentic assessment assignments.
3. The audience will create individualized assessment methods.

The session will begin with a PPT presentation describing the why, what, and how of both didactic and clinical assessment. During the presentation, open discussion will be encouraged. Examples of program assessment plans, as well as individual course assessments will be provided to the audience. Small groups will be formed and asked to create their own assessments based on their needs/interests: programmatic, course, didactic, clinical, hybrid. Once the assessment is created, the groups will trade and critique the assessment.

The presentation's emphasis will be on the interactive portion and creation of assessments and sharing of ideas.

# **Sacred and Secular Leadership Discourses: Interpreting Leadership in an Educational Framework**

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## **ABSTRACT**

This is a qualitative study from an insider/outsider position of a constructivist/interpretivist approach where semi-structured interviews with 12 evangelical Christian senior school leaders, four in each of three Anglophone countries informed the data. A hybrid method of grounded theory and data analysis was utilized with a number of different data sources. The preliminary literature for this research was based on the readings of various contemporary theories of leadership including transformational/relational/ethical literature. Two descriptors of leadership became the primary framework for the thesis: the “sacred” and the “secular” discourses relating to school leadership. The participants, speaking through the sacred discourse, express an extension to or linkage with the secular literature, revealing much more overlap between the two discourses than was expected. However, the secular literature does not capture the sacred discourse; there is an appurtenance – an add-on – a more spiritual dimension, to consider. The second data framework emerged around attributes of leadership. Standing in the doorway, as it were, the researcher took on a role of interpreting and translating one discourse to the other rather than acting solely as observer and interpreter of the data.

## **Introduction**

This paper explores the research established in the area of school leadership from a sacred and secular scholarly, leadership literature discourse, as well as through the sacred discourse of evangelical Christian school leaders. It is my thesis that both discourses (sacred and secular) overlap, inviting all school leaders to participate in what leadership in education espouses today concerning three attributes of leadership: “calling,” “stewardship,” and “serving”; toward the “building of community” in schools.

Three main findings emerged from this research and answered the following research question:

*How is the sacred discourse of the participants in the 12 evangelical Christian schools in three countries (Canada, the United Kingdom and the United States) expressed in terms of their leadership enactment, and is there an overlap or linkage with the relevant secular literature regarding attributes of leadership and community building?*

## **The Central Argument**

The central argument proposes that there is a discourse around evangelical Christian school leadership that is not unlike the discourse of their secular counterparts. The sacred and secular

discourses emerged as the primary framework, and were encapsulated within the “attributes of leadership” themes (the second key framework), indicating there to be little difference between the conversations around school leadership, instead revealing an overlap of the two discourses. The third framework; the transformational/relational/ethical and conventional, secular and sacred scholarly leadership literature corroborated the participant data. My voice as researcher emerged as interpreter and translator between the two discourses. For the purpose of this paper, and the time constraints involved, only the “attributes of leadership” will be discussed; leaving community building through leadership for another discussion.

## Methodology

Methodologically, data organization, collection, analysis and evaluation, and the presentation of ethical dilemmas, particularly in the area of insider/outsider and the two different perspectives (Olson, 1977) they represent is critical. I have been involved in evangelical Christian education for many years, which established me as an insider. However, I was not acquainted with any of the school leaders participating in the research, nor was I familiar with the school cultures of the participants (see Table 1, page 2), which protected me from the worst of researcher bias (Gallais, 2003) as an outsider.

Table 1: Participants’ Schools’ Cultures

Country and School	Professional Affiliation	Church Affiliate School	Number of Staff	Number of Team Leaders	Number of Pupils	Pupils Confessing Christ	Grade Levels	Student Ethnic Diversity	Staff Ethnic Diversity
UK1	TISCA	No	78	6	667	30%	PreK-6th Form	93% Caucasian 07% Other	98% Caucasian 02% Other
UK2	TISCA	No	48	5	335	10%	PreK-6th Form	94% Caucasian 06% Other	98% Caucasian 02% Asian
UK3	TISCA	No	120	7	725	45%	PreK-6th Form	86% Caucasian 14% Other	98% Caucasian 02% Asian
UK4	TISCA	No	35	6	550	87% Nominal	PreK-5th Form	57% Caucasian 30% Mixed 13% Asian	97% Caucasian 02% African 01% Asian
CA1	ACSI	Yes	58	5	530	95-98% Can. 50% Intl.	Pre-K-12	50% Caucasian 40% Asian 10% Other	98% Caucasian 02% Other
CA2	SCSBC	No	91	6	835	Intent is 100%	Pre-K-12	20% Caucasian 80% Asian	96% Caucasian 04% Asian
CA3	ACSI	No	35	5	325	95%	K-12	87% Caucasian 10% Asian 03% Other	95% Caucasian 05% Other
CA4	ACSI	No	85	6	660	90%	K-12	95% Caucasian 05% Asian	100% Caucasian
US1	ACSI	No	73	5	662	Intent is 100%	K-12	81% Caucasian 10% Asian 09% Other	95% Caucasian 05% Other
US2	ACSI	Yes	100	13	835	85-90%	Pre-K-12	70% Caucasian 13% Afr. American 12% Asian 05% Other	99% Caucasian 01% Other
US3	ACSI	Yes	35	5	300	Intent is 100%	Pre-K-12	43% Caucasian 26% Asian 16% Afr. Amer. 05% Hispanic 10% Other	60% Caucasian 16% Afr. Amer. 08% Asian 08% Hispanic 08% Other
US4	ACSI	No	35	6	550	Intent is 100%	K-12	93% Caucasian 07% Other	95% Caucasian 05% Other

Operationalizing a constructivist framework involved a qualitative methodology during each phase of the research. Collection of data from participating schools’ web documents, using a

purposive and convenient sampling of participants from which semi-structured interviews were drawn, the use of an observational journal and shadowing of the participants led to the coding and subsequent data analysis. I interviewed 12 evangelical Christian school leaders from three Anglophone countries: Canada, the United Kingdom and the United States (see Table 2, page 3). Utilizing a hybrid form of grounded theory (Rubin and Rubin, 2005) assisted me in identifying themes to emerge from the data.

Table 2: Participant Data

Country and Leader	Gender and Position	Ethnicity	Age Range	Years in Leadership Position	Education and Course Work	Professional Leadership Training	Teaching Experience and Subjects	Currently Teaching
UK1	Female Head Teacher	Caucasian	46-55	2 Years	BA Education Maths, Computers	Educational Management, Headship Qualification	30 Years Maths, Computers	No
UK2	Male Head Teacher	Caucasian	46-55	5 Years	BA French BA Literature	None	10 Years French	Yes French
UK3	Male Head Master	Caucasian	46-55	4 Years	BA Economics	Business Management	None	No
UK4	Female Head Teacher	Caucasian	46-55	13 Years	Religious Education Primary/Nursery Certificate	University Courses Conferences	13 Years Kindergarten	No
CA1	Male Superintendent	Caucasian	46-55	14 Years	BA Geography BA Psychology 1 Yr Teacher Ed	MA Coursework	24 Years Geography	No
CA2	Male Superintendent	Caucasian	46-55	7 Years	BA Education BA Music	Courses, Conferences, Evaluation Teams	11 Years Elementary	No
CA3	Male Superintendent	Caucasian	46-55	13 Years	BA Theology	MA Ed Leadership	22 Years Bible, Computers	No
CA4	Male Superintendent	Caucasian	46-55	8 Years	BA History, English Bible Courses Teacher Certification	MA Leadership Seminars/Conferences	19 Years History, English Maths, Science	No
US1	Female Superintendent	Caucasian	56-65	3 Years	BA Elem Education MA School Admin	Conferences, Workshops	13 Years Elementary	No
US2	Male Head Master	Caucasian	56-65	15 Years	BA Business, Phy Ed MA School Admin	Mentor Relationships Conferences	3 Years Business, Phys Ed	No
US3	Female Superintendent	African American	56-65	3 Years	BA Public Relations MA Business Ed EdD Higher Ed	MA Christian Ed Conferences, Workshops	None	No
US4	Male Superintendent	Caucasian	56-65	2 Years	BA Ed Theology MA/PhD Psychology PhD School Admin	Air Force Officers School, Air Command College, Christian Ed Leadership	8 Years Bible, Maths, Psychology	No

## Review of the Literature

Exploring the discourses regarding school leadership entailed looking at the scholarly, conventional and transformational leadership literature from both the secular and the sacred discourses. The leadership literature from both discourses supported the data regarding leadership behaviours and attributes of evangelical Christian school leaders.

In this twenty-first century, a school leader's relationship to stakeholders and the institution, and their response to diverse contexts, is observed in models of leadership that are more people-centric (Kars, 2006), offering a distinction between the process of leadership and the socially-constructed role of leader brought forth in the research. Wofford (1999), with a view toward transformational leadership, affirms the sacred/secular distinction and overlap:

Christian leaders have a spiritual dimension that is unlike that of their secular counterparts. They do have in common with secular charismatic

leaders a strong commitment to their vision, a need to influence others in pursuit of the vision, a high sense of confidence, and optimism about future results.

(Wofford, 1999: 102)

Schools have increasingly focused their attention on transformational or “facilitative” leadership which relies on trust, letting go of control and allowing others to function independently, interdependently and successfully within a common framework of expectations and accountability (Conley and Goldman, 1994). Current transformational/relational/ethical theories of leadership tend to focus on values, empowerment and leadership that is more collegial and distributive; whereas prior to the twenty-first century, the management literature that was then very influential would have contrasted much more strongly with the data that I collected from the participant interviews.

### **The Sacred/Secular Discussion**

An introduction to the language of discourse explains the sacred/secular discussion in this research where reference is given to the participants’ voices and to the sacred and secular literature. Hyatt (2004) proposed a definition of “the specific language of a particular discourse community” meaning:

a group of people who share a similar and specific way of talking related to their professional interests or their social philosophy.

(Hyatt, 2004: 44)

Jensen (1995: 31) considers the “sacred” and the “secular” as “two autonomous but interdependent discourses within a multiplicity of categories of meaning that interpret different modes of existence” which, ultimately, may well be an accurate description of the two discourses in this research as they were revealed through the data analysis to overlap, corroborate and relate to one another.

### **Data Themes and Findings**

#### ***The Sacred and Secular Discourse and Appurtenance***

The sacred and secular discourse and appurtenance became the first key finding in this research. Fairclough (2003: 130–131) suggests that “different discourses may use the same words, but they may use them differently, and it is only through focusing upon semantic relations that one can identify these differences” while recognizing and appreciating their similarities. While the participants’ sacred discourse and that of the secular scholarly literature revealed an overlap, offering corroborated results from the constructs of the second framework, i.e. “attributes of leadership” some distinctions arose that presented an appurtenance to the discourse of the evangelical Christian school leader participants, adding a rich dimension to their expressions of leadership.

A key finding from CA1 and CA4, for example, offered a comprehensive description of evangelical Christian school leadership with a spiritual and practical dichotomy, illustrating the

sacred discourse, yet at the same time revealing an overlap with the practical and secular discourse in terms of leadership attributes:

Stepping out of the way, but then taking the talent and the skill-set that we have... walking humbly within it with the power of God's spirit. That is in a spiritual sense. In a practical sense, leading is modelling; laying out the critical thread with the leadership team, but allowing the team to build the structure and the skeleton with you rather than a single man's or woman's vision, and then holding them accountable; and for them to do the same with the people that they lead.

(CA1)

The appurtenance here establishes that both participants deemed God to be the source of their leadership in both a practical and spiritual sense when considering attributes of leadership that are more distributive, collegial and empowering. CA4 spoke of his frustration regarding the Christian distinctiveness and spiritual formation within his school, yet was insistent that spiritual formation be a core value:

Even though we say that our distinctiveness is Christ-likeness... we have all the trappings of Christianity: chapel, Bible courses... but is the rubber really meeting the road in the lives of our students? What would it look like if we have spiritual formation as our core value and build the school around that, rather than have the Bible as an appendage around the school?... This became my on-going vision... to build into the elements of the culture of the school... the heart of connecting to the Father [God].

(CA4)

There is a strong emphasis on core values, accentuating the sacred distinction to the discourse of CA1 and CA4, reflecting the views of 100 per cent of the participants, and intimating that it is critical to align core values to a school's spiritual and practical philosophy. While there may be a tendency in school leadership to lose sight of core values and beliefs (Creighton, 1999), the secular discourse and the sacred discourse of the participants confirmed that core values must underpin leadership attributes and subsequent leadership enactment toward the building of a spiritual and relational school community.

The findings indicated clear connections between the school leaders' espoused values and their leadership attributes. Contrary to the biblical worldview of the participants regarding the emanation of leadership attributes and values as coming from God, Gold, Evans, Earley, Halpin and Collarbone (2003: 61) and Earley and Weindling (2004: 136) suggest that the "origin of values is not always clear," but contend that values may be broadly defined as "social democratic or liberal humanist in nature." Grace (2000: 241) maintains, from a sacred discourse, that "modern professionalism may itself be understood as a secular and mediated form of an earlier sacred conception of the responsibilities of educational leadership." This conception strongly suggests that secular values have emanated from sacred values, underscoring the distinction and/or overlap between the sacred and the secular discourse.

Although the leadership values and attributes expressed through the sacred and secular discourses are analogous, with no perceived distinctions, the values and attributes may differ in expression and meaning for the participants, periodically revealing the distinctiveness of the evangelical Christian school leaders' discourse; thus, communicating the origin of their values and their leadership attributes.

***Attributes of Leadership***

The second general finding revealed that three inextricable key attributes of leadership were most often perceived to direct the leadership of the evangelical Christian school participants. With the participants making 145 direct references to leadership as opposed to 14 direct references to management (see Table 3, page 6), both discourses expressed an intentional move from “management” to “leadership” as a changing discourse, a paradigm shift regarding educational leadership, in which leadership is replacing the term management (Worrell and Appleby, 2000).

Table 3: Leadership versus Management Data

	UK1	UK2	UK3	UK4	CA1	CA2	CA3	CA4	US1	US2	US3	US4
<b>Leadership</b>	22	5	8	6	9	5	15	18	11	7	7	4
<b>Management</b>	1	0	7	1	0	0	3	0	1	1	0	0

From a secular discourse, Earley and Weindling (2004: 13), for example, contend that “leadership as a concept is in the ascendancy”:

School leaders are returning from the managerial role of the 1980’s to the twenty-first century role of lead professional – leading the learning, sharing the vision and empowering school stakeholders to shape and change, when necessary, the overall culture or sub-cultures of their particular schools.

(Earley and Weindling, 2004: 45/20)

The data showed that school leaders are the key constituents when leading and affecting their schools’ communities; that specific leadership attributes have to be enacted, but who enacts them is not so critical (Heller and Firestone, 1995). The majority of the participants expressed commitment to developing collective leadership and a sense of community in their schools, where leadership is distributed to other stakeholders (Lewis and Murphy, 2008). The three key attributes of leadership to emerge from the research data were: “calling,” “stewardship,” and “serving” (see Table 4, page 7).

Table 4: Attributes of Leadership

Attributes		UK1	UK2	UK3	UK4	CA1	CA2	CA3	CA4	US1	US2	US3	US4
<b>Calling</b>	Direct Reference to Calling					4	5	9	2	5	2		4
	Divine Intervention/ Hand of God	7			7	1			3	4	4	6	1
	Motivation for Leadership Tasks					1	2	3		2	1		
	To Ministry/Vocation/ Respective Schools	1		1		2	3	2	1	2	2	1	2
	Serving School/Local/ Global Communities	1		4	2	3	3	3		2	4	2	3
	Use Gifts/Talents/ Knowledge	1		2		1		5	1	2		3	2
<b>Stewardship</b>	Direct Reference to Stewardship					1				1			1
	Safeguard/ Protect/ Cling On To	3	6	2	4	3	2	5	3	2	4		4
	Of the Christian Ethos	10	8	7	11	2	2	34	4	3	2	1	2
	Commitment to Serving Stakeholder Needs	3	5	3	4	4	5			4	5		6
	Of the Vision		3	1		6	7	14	11	2	2		3
<b>Serving</b>	Direct Reference to Servant-Leadership	2								6		1	2
	Direct Reference to Serving/Service	5	6	4		3	7	12	1	7	30	3	4
	Serving is Leading	1	1	1			1	3			1		
	Leading to Create Culture of Service	2	1	2			2	3			4		
	Christ-Centred	1	2	2		1	8	4	1	7	6	5	6
	Begins with an Attitude	1	1	1		2	3	1		1	2	1	6
	Being Example or Modelling	4	2	4		5	1	1	8	7	17	5	3
	Empowering Stakeholders	3		1		4	6	7	5	2	1		8

**The “calling” attribute of leadership** – the initial and frequent spiritual response to leadership, to ministry and to vocation – revealed itself as motivation to task enactment, having both a practical and spiritual influence in the leadership and personal lives of the participants. The first attribute, “calling,” was cited by 10 of the 12 participants who also linked this leadership attribute in some way to the other attributes of “stewardship” and “serving”.

The vision that the participants have for their schools, as well as how they lead in their “calling and vocation” (Buechner, 1973: 95) was shown to be significantly influenced by their commitment to school leadership as a calling (Jelfs, 2010) to the local and global communities. CA3 illustrates the “calling” directive to affect the world.

You are *called out* (emphasis CA3) from the world unto something... to use those gifts. It’s a vocation; a calling from God that will affect the world, change the world, love the world, win the world... to serve my community... to empower and equip... is to lead my community.

(CA3)

Sixty-seven percent of the participants asserted that they recognize divine intervention in their lives, but used terms such as “God’s hand” and “God preparing me”. UK1 expressed what she considered the direct influence of God’s intervention in this way:

It seemed a bit strange initially, God’s hand in bringing me here; but I have seen God’s hand in everything... with my knowledge and familiarity with early years education... with the situation that the school went through... God was preparing me.

(UK1)

CA3 and UK1 conveyed a sense of calling with a definitive purpose. Likewise the secular discourse referred to work as a “calling”, suggesting that it may have an impact on society in some way (Bellah, Sullivan, Tipton, Madsen and Swindler, 1996). Braskamp (2008), who writes from a sacred discourse, suggests:

Leading is *holistic* (all italics Braskamp) in nature and purpose. The core theme of the conception of leadership is this: *leading is inner-based and outer-focused*... is anchored by *vocation*, a sense of calling to a higher purpose... reflecting on one’s gifts, strengths, and opportunities... a discovery of one’s life purpose by living with vocation, leading with vocation, and developing community with vocation.

(Braskamp, 2008: 1–2)

Secularized notions of calling were shown to overlap with the sacred discourse of the participants, indicating that calling is more expansive, whereby one finds personal fulfillment in one’s work and perceives work as meaningful and purposeful when following or pursuing "one’s path with a heart" with the “intensity of a *calling*”; a work that culminates in service to a community (Hall, 2004: 9/11). Consequently, “as a subjective construct,” calling was found to be “consistent with psychological success and actually precedes objective outcomes” (Hall and Chandler, 2005: 162). As an “existential experience of work,” Steger, Pickering, Shin and Dik (2009: 10-11) suggest that “people who approach their work as a calling” have a highly valued sense of contribution and worth in their work lives,” resulting from a divine inspiration to do morally responsible work (Weber, 1963).

**The “stewardship” attribute of leadership** – the commitment to caring for and tending to all aspects of leadership – manifested itself in the safeguarding, protecting and overseeing of the various aspects of the participants’ schools’ cultures. In contrast to the “me and mine” perspective of ownership, stewardship implied an expression of interdependence and service, where the participants were guided by a shared or common vision, mission and value system (Covey, 1998). From the perspective of the participants and from the secular literature, leadership as stewardship placed the participants “in service to ideas and ideals and to those who are committed to their fulfillment” (Sergiovanni, 2007: 59).

The notion of stewardship suggests that there is a broader definition to stewardship than simply the stewardship of resources, one that encompasses a stewardship of ethics and moral leadership (Caldwell and Boyle, 2007). Stewardship is, at its foundation, a commitment to serve and lead in partnership rather than patriarchy, and empowerment instead of dependency (Keith, 2008).

As a promising leadership alternative, Reinke (2004:46) proposes that stewardship has a three-fold purpose: to put the needs of others before their own; to practice a participatory leadership style; and to demonstrate commitment to growth of stakeholders. The three most significant dimensions of stewardship to emerge from the data analysis were stewardship of the Christian heritage and ethos, stewardship of the commitment to serve stakeholder needs, and stewardship of the vision.

#### *Stewardship of the Christian Heritage and Ethos*

One hundred per cent of the participants carefully guarded their schools’ evangelical Christian heritage and ethos so that it would be maintained for future generations. Each of the schools in the UK had a strong commitment to evangelism and the preservation of the Christian heritage and the schools’ “spiritual capital” (Caldwell, 2008) as expressed by UK4:

My assuming the leadership... was a huge commitment... a deepening experience... keeping it up for the next generations... myself as a link in the chain that protects what we’ve got – the Christian ethos, because it’s so important and it’s becoming so rare. I suppose I’m seen as that of protector.

(UK4)

The participants put “sustainability at the heart of their schools’ ethos” (Fullan, 2005), engaging school stakeholders in that effort (Porritt, Hopkins, Birney and Reed, 2009). “Sustainable schools have a caring ethos – caring for oneself, for each other, in terms of the current culture, and for future generations” (Porritt *et al.*, 2009: 6). The secular discourse corroborates the sacred discourse whereby stewardship of an ethos means that leaders as stewards foster the preservation, teaching and protection of the ethos that has been given, and must be faithful to the trust that is ineradicable in relationships (Pellegrino, 2012: 228).

### Stewardship Commitment to Serving Stakeholder Needs

Stewarding the needs of the individual through a calling and serving model of leadership (Liden, Wayne, Zhao and Henderson, 2008) exhibits selfless acts of love, care and the creation of deep relationships (Scarborough, 2009), and was found to strengthen the pastoral care offered to stakeholders within a school community (Brown, Busfield, O'Shea and Sibthorpe, 2011). US2 spoke succinctly for the participants regarding his commitment as to who is to be served, emphasizing the “calling” aspect of serving the needs of others:

It's all of the family that we're *called* (emphasis US2) to serve. The person who needs your help is the person that you need to serve... on a spontaneous basis, when their need is greater than my time. That person in front of you is the most important appointment... Jesus modeled that.  
(US2)

US2 suggests that meeting the needs of others by serving is “altruistic in nature” (Whittington, 2004: 163) where commitment to the stewardship of stakeholder needs leads to a form of caring that is ethical and can contribute to “social capital,” because the emphasis is not only on the person in need of care, but subsequently impacts the entire school family toward a “give and receive” relationship (Johansson, Leonard and Noonan, 2012: 45).

### Stewardship of the Vision

With collaborative stewarding of the vision of the school, the future doesn't just belong to the senior leader (Jelfs, 2010); instead, leadership is about enacting and articulating others' “visions” (Kouzes and Posner, 2006), “ideas,” “insights,” “directions” and “perspectives,” concerning the direction that a school should take.

The main thrust of vision from the view of the participants was that it should be a collaborative process in which leaders envision stakeholders as empowered to contribute to the community-building endeavors within their schools. CA3 expressed the view of 75 per cent of the participants, declaring that stewardship of a vision must be evangelistic in purpose, but it occurs by building alignment and commitment to the vision through inspiring and equipping stakeholders toward the building of community:

Building our team... working with others, partnering, taking our expertise, helping people around the world... In the priority of our leadership, building up new vision so our latest endeavour is both growing and maintaining our kids... then reaching out. ... My biggest role is to constantly hold the direction and vision of the school... I have delegated as much management away from me as I can, so I can concentrate on managing the vision... I am continually taking the temperature of the school... constantly speaking into the vision... to move the community...to where we ought to go... Then, to inspire and gather people to go there with you... You just can't do it on your own.  
(CA3)

CA3 suggested that stewardship is more than maintenance. It is about visionary management and assessment; keeping it, and managing it for the purpose of reaching the goals of the school (Payton and Moody, 2010). CA4 explained the full implication of vision as a collaborative process:

Once the vision is cast... defined... communicated... talked about... shared, allowing the team to build the structure and skeleton along with leadership... Leading is being able to cast a vision, but then... to link arms... to work with the troops to get there.

(CA4)

CA3 and CA4 communicated a brief overview of the visionary process and what they believed to be vital in terms of visionary leadership: collaboration. Similarly, the secular literature corroborates this view. Smith (2001), from his comments regarding the learning organization proposed by Senge insists:

Stewardship involves a commitment to and responsibility for the vision, but it does not mean that the leader owns it; the leader's task is to manage it for the benefit of others.

(Smith, 2001: 9)

Consequently, as stewards of the vision, the evangelical Christian school leaders invited participation and articulated a shared vision back to their schools' communities (Digiorgio, 2008) and beyond. The secular discourse suggested that a good steward is "master in keeping vision, mission and goals at the forefront of everyone's attention" (Murphy, Elliott, Goldring and Porter, 2007: 183). "Shepherding occurs when leaders act as stewards, keepers and promoters of the vision, inspiring others to align their vision with the school" (Murphy *et al.*, 2007: 185).

Just as the mainstream secular literature regarding school leadership declares that a shared vision is not driven from the top of the hierarchy, but is derived from a collaborative process where all of the stakeholders determine the goals and vision of the school community (Fullan and Hargreaves, 1996), the participant leaders also articulated this view of visionary leadership. The participants became stewards of their institutions committed to a "clear and compelling vision that produced a sense of calling" (Fry and Matherly, 2006: 5), affirming that leaders with foresight can be trusted to be stewards, to make sound decisions, and put what is best for their followers ahead of their individual agendas (Sergiovanni, 2000).

**The "serving" attribute of leadership** – which facilitates transformational and servant-leadership – is defined as service, which is realized by giving and serving, and may apply to all leaders (Phillipy, 2010). Four participants made a direct reference to servant-leadership. UK2, while remaining sceptical about the labelling of such terms as servant-leadership, saw himself as committed to serving and leading his school.

I am a little bit wary of the term [servant-leadership]... because there is sometimes the view that it is absolute truth, or someone found a shaft of

wisdom which has made everything clear; and it's never the case... The concept is a very powerful biblical one. I don't go to the extent of... washing the feet of my senior team, but part of my role is to help them (the team members) do their jobs... We're all in this to serve others... We will not run a Christian community unless we are focused on serving others. We are not in it for ourselves.

(UK2)

UK2 intimated that servant-leadership is more complicated than one might expect, but that serving, nevertheless, is selfless in leading an evangelical Christian school community. From a secular discourse, Bass (2000: 33) notes that “servant-leaders select the needs of others as their highest priority”, revealing an attitude toward stewardship, service and an ethical dimension to leadership. The participants expressed the attribute of serving in four fundamental areas: serving is leading; serving begins with an attitude; serving is modeling appropriate leadership behaviors; and serving is empowering.

### *Serving is Leading*

First, serving surfaced not only as a distinct attribute of leadership, but half of the participants perceived that there was no distinction between the constructs of leading and serving. UK3 explained the construct of service and leadership:

Let's hope our students say that we set them up for a... Christian life of service or leadership... The two might be interchangeable.

(UK3)

CA3 confirmed a relationship between “calling” and “serving”:

Leadership is serving... the whole paradigm of being a leader is to serve people. I serve by leading... my gift, my role. If I'm using my gifts to serve my role... and my full attention in the school is how I lead the school, then that is my servant-hood to the school... If I don't lead the organisation into the callings and directions... that God has given us, then no one else is going to do that.

(CA3)

UK3 and CA3 equated serving with leading, where “servant-leadership is more easily provided if the leader understands that serving others is important” (Sergiovanni, 1992: 125). Within the secular discourse, Van Dierendonck (2010: 1231) posits that “serving and leading become almost interchangeable, where being a servant allows a person to lead; being a leader implies a person serves.”

### *Serving Begins with an Attitude*

Second, the data revealed that serving begins with an attitude toward service; that one's “attitudinal mind-set provides the basis for servant-leadership behaviors” (Matteson and Irving,

2006: 39). Ten of the 12 participants perceived that they led their schools with an attitude of service and humility, centering the serving aspect of leadership on attitudes (Greenleaf. 2002). US2 best explained an attitude of serving:

Servant-leadership starts with an attitude... I'm a firm believer in serving the person that's in front of you... I speak that to our people... Serving needs to be viewed as an honorable thing. Sometimes there is that perception that leaders lead and everybody serves them.

(US2)

Likewise from the secular discourse, Pollard (1997) posits what a true leader is, yet he suggests that a true leader is *not*:

the person with the most distinguished title, the highest pay, or the longest tenure... but the role model, the risk taker, the servant; not the person who promotes him/herself, but the promoter of others.

(Pollard, 1997: 49–50)

### *Serving is Modeling Appropriate Leadership Behaviors*

The third aspect to emerge within the serving attribute of leadership was modeling appropriate leadership behaviors. Eleven of the 12 participants perceived that they led their schools by setting a personal example (Riechmann, 1992), particularly in the outworking of their Christian faith toward the service of others. US2 expatiated 30 times the serving aspect of his school's mission and the importance of leadership that models the serving aspect of leadership:

Part of the balance in an evangelical Christian school... part of that holistic approach to education... is the element of students serving, and then our passion and our persuasion to educate them... to model and teach that spiritual aspect – learning to serve like Jesus.

(US2)

US1 commented:

It's that modeling... as Christ-centered servant-leaders... That is what leadership is about... Christ-filled, servant-leadership!

(US1)

The above responses of US2 and US1 indicated that if one desires to impart the serving attribute of leadership into the school's stakeholders as an educational imperative, one must first trust, then lead people by example, modeling servant-leadership behaviors. Covey (1998) argues:

You've got to... foster trust through individual character and competence at the personal level. Once you have the trust, then you lead people by... example and modeling. That is servant-leadership.

(Covey, 1998: xvii)

Likewise the mainstream secular literature suggests that the principal need no longer be the “headmaster or instructional leader” but may, instead, act as “head learner... modeling and celebrating what is hoped and expected that teachers and pupils will do” (Barth, 1990: 45–46). Participant school leaders must model “desired leadership dispositions and actions,” enhancing stakeholders’ beliefs about their own capabilities and passion for change (Leithwood and Riehl, 2003: 4).

### *Serving is Empowering*

Fourth, the belief that serving is empowering was asserted by 10 of the 12 participants, suggesting that leaders must trust stakeholders with a certain amount of autonomy in carrying out their specific tasks. The participant school leaders with a strong “serving” attribute had spiritual climates that were dependent on the creation of cultures of empowerment and distributive leadership (Hargreaves and Fink, 2003). The participants placed a strong emphasis on empowering stakeholders and distributing leadership as far down the stakeholder chain as possible. US4 affirmed that he sees empowerment through serving as permeating the whole school:

My success as a leader comes only when I empower others... to serve these ladies out here so that they can serve those who are utilizing the services of the school.

(US4)

UK1 aspired to serve by inspiring and empowering others to assume leadership in one’s own sphere of the school:

There’s much more to leadership; the people skills – trying to inspire other people... giving them empowerment to go ahead with things. I would devolve leadership probably! Distributive leadership would be the kind of clichéd phrase... where every decision made in the school doesn’t need to come through me – the pupils, the parents, and other staff can take responsibility... I’ve distributed that autonomy... The facilities manager taking responsibility... is showing leadership... valuing the contribution that he makes; that is distributed.

(UK1)

The findings revealed that senior leaders typically relinquished their decision-making to other team members, empowering them; leading from the bottom, non-hierarchically, valuing a collaborative/team approach to leadership, attempting to evoke “maximum involvement and participation of every member... to spread responsibility rather than to concentrate it” (Krech, Crutchfield and Ballachey, 1962: 435). The secular discourse corroborates the participant data given that collaborative and non-hierarchical leadership implies “collegiality, acceptance, co-operation, teamwork, the sharing of ideas and mentoring,” all significantly contributing to individual and organizational development and the building of community in a school (Earley and Weindling, 2004: 180–81).

A strong message from the secular scholarly literature on leadership commences with Jones (2009: 153) who, while examining collaborative leadership in schools in England, found the PricewaterhouseCooper's 2007 national study to conclude that "the role of school leaders has become more challenging in recent years, and the number and complexity of the tasks they are required to undertake has increased significantly"; therefore, "school leadership has a greater influence on schools and students when it is widely distributed." Often, the participants' "leadership tasks were not undertaken by themselves alone," but by many of their schools' stakeholders working together to produce better outcomes (Kruse and Louis, 2009: 11). Where leadership invites the participation of others, leadership is distributed, leading to "real empowerment in terms of true delegation of leadership power" (Huber, 2004: 670).

Workplace empowerment proposes that "everyone is free to do what makes sense as long as stakeholders' decisions embody the values shared by the school community" (Sergiovanni, 2007: 83). Thomas and Velthouse (1990: 666) argue that empowerment is "increased intrinsic task motivation, which reflects on one's orientation to fulfill a work role." In their efforts to reconceptualize leadership for change, the participants expressed a determination that successful change resulted not just from the work of one key leader, but from the effective utilization of the three leadership attributes by a variety of empowered school stakeholders (Heller and Firestone, 1995).

## **Conclusion**

This discussion of the research provided a summary of the findings from two discourses: the "sacred" and the "secular". The participating evangelical Christian schools' web documents, semi-structured participant interviews and a field journal containing observations during the school site visits provided the sacred discourse alongside the sacred scholarly literature. The secular discourse emanated from the secular scholarly literature. Methodologically, I determined that I could place myself in a unique position as insider/outsider researcher, interpreting, constructing, illuminating and translating one discourse to another.

A key finding from the analyzed data was that the "calling", "stewardship" and "serving" attributes of leadership served as catalysts to the spiritual, relational, experiential, organizational and instructional dynamics of the participants' schools. The initial "call" to leadership included the "calling" attribute of leadership as motivation to task enactment where school leaders act as "strategic stewards" (Mosbacher, 2007: 192) in an attempt to align their schools for service through a commitment to serving. The sacred discourse was described as a "calling" concerning the "serving," "shepherding and stewarding of God's people" (Stott, 2002: 37). The findings suggested that the call to leadership precludes all other attributes of leadership.

It was determined that no one particular leadership attribute can be linked to organizational performance; therefore, it may also be construed that no one leadership attribute on its own would yield organizational success (Currie, Lockett and Suhomlinova, 2009); that success is a compilation and integration of multiple attributes of leadership. There is a consensus from both discourses that one's core values and the three attributes of leadership are critical to the building of community in schools.

Although organizational structures, models and theories of leadership are significant, they do not matter as much as the attributes and “behaviours exhibited by the leaders of the organization” (Feiner, 2003). The overall research findings indicate that the leadership attributes of evangelical Christian school leaders are not so different from country to country, and do not differ so much from those of their secular colleagues, yet there is an appurtenance, a distinctive element to evangelical Christian school leadership that indicates a philological element to their discourse, revealing the Christian values inherent in their educational imperative.

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# **Minding the Gap between High-school and Admission Level: A Competency-based Approach at Salman Bin Abdulaziz University**

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## **ABSTRACT**

*With the first decade of the 21st century, it was clear that universities began to grapple with the challenges of globalization and implications of the digital era. This study is part of a University remedial strategic project to bridge the gap between high school graduates' competencies and admission level competencies at Salman Bin Abdulaziz University (SAU). The research constitutes the first phase of the project that aims to identify the key success competencies for admission level and developing a comprehensive list of learning outcomes underlying each key competency. After reviewing the relevant literature and the work of distinguished experts, the authors reached this convincing/well-founded competency inventory for admission level at SAU. The inventory includes seven main components: language of instruction, IT communication skills, basic Statistics and numerical skills, Mathematics, Biology and Physics. This competency inventory will be the cornerstone to develop competency-based curriculum for the Orientation Program. The university strategic plan has been prioritized this program development as a strategic objective to facilitate the educational development of the university.*

**KEYWORDS:** Higher Education, Preparatory Year Program, Competency-based Approach

## **INTRODUCTION**

Studies show that too many students are leaving college without the skills needed to be successful in the workforce (Burke & Butler, 2012). Universities all over the world also confront the problem of students' retention and attrition. One major university concern is the capacity of high-school graduates to pursue their academic study adequately with high a GPA. Such academic accomplishment is important for higher education institutions to attest to the validity of the educational process and attain the progression ratio of accreditation standards.

Nevertheless, the gap between high school graduates' competencies and admission level competencies at universities is an appalling phenomenon that hinders academic progress. Therefore, quite a few institutions offer limited supportive programs or preparatory year programs to facilitate the process of students' transition from high school to university. These programs aim to help student to master the core competencies needed for success in their higher education as well as helping them as life-long learners and future employees who can communicate effectively, think creatively, solve problems, make decisions, and interact professionally with the technologies in the workplace. These competencies are essential to provide the admitted graduates to thrive in the changing work world.

## **BACKGROUND AND PROBLEM**

The Higher education sector in the Kingdom of Saudi Arabia has grown substantially since the late 1990s in response to the demand for higher education and national development plans. The number of public universities increased from eight universities in 2000 to 25 in 2012. One of the crucial developments for higher education was establishment of National Commission for Academic Accreditation and Assessment (NCAAA) in 2003.

The NCAAA issued the National Qualifications Framework for Higher Education in Saudi Arabia (NQF). This document identified the characteristics of programs and expected learning outcomes at different levels. The NQF levels start with what it calls an “Entry Level” which indicates a student’s qualifications upon completing secondary education.

The NQF assumed that the enrolled students have completed secondary education and have acquired the knowledge and skill needed to participate effectively in their chosen of study in higher education. This background includes certain linguistic competence in the language of instruction, the ability to think creatively, apply knowledge and cognitive skills gained to relevant disciplines, and the ability to work independently and take responsibility for their own learning. It further includes particular prerequisites for studying in different specialization fields. These eligible students may proceed directly to the higher education programs described in the Framework, while ineligible ones need to complete preparatory or foundation studies to acquire the necessary language, study, and academic skills needed to succeed in post-secondary programs (National Commission for Academic Accreditation and Assessment, 2009).

The NQF additionally stipulates that the foundation studies ensuing the post-secondary program are not part of the regular higher education. Thus, any credit hours allocated for this preparatory phase do not count towards a post-secondary education award (National Commission for Academic Accreditation and Assessment, 2009, P.7).

### ***Need for the Study***

During the past few decades, the Saudi government has been investing huge budgets in developing both higher education as well as public education. However, the Saudi academic community has raised concerns that the mainstream secondary education is inadequate and thus a transitional phase is required to smooth progressing into higher education. Thus, Preparatory Year became a compulsory component by the Ministry of Higher Education in help students meet the competency and performance expectations for university admission in line with many documented reasons for more effective endeavors to raise these competencies in different universities around the world. Exploring how undergraduate learning of generic, subject-related and meta-cognitive skills is therefore important to integrate skills and create supportive learning environments in higher education.

This inadequacy has been linked to various other physical and psychological skill deficiencies. Developing the level of mathematical skills, technological skills and study skills is essential for the new students in order to achieve remarkable success in higher education (Gavalcova, 2008 & Appleton, 2005). Dyslexia is another major deficiency that affects the efficiency of higher education programs. Dyslexic students face difficulties during their university study with a wide range of skills and academic tasks, such as, note-taking, essay structure and written expression (Mortimore & Crozier, 2006).

In addition, high-risk students with low high-school grades, poor study skills, low aptitude scores and modest ambition, can improve upon their predicted grade point average when a study skills remedial treatment is employed within the pre-college program (Thompson, 1977). One more vital need stems from the demands of the labor market for skilled workforce in fields of Science, Engineering and Technology (SET), while the majority of the learner preferences are predominantly in the field of Humanities, thereby creating a mismatch between graduate preferences and the needs of economic development of the country (Cosser, 2010).

### ***Objectives and Problem Statement***

One high-priority and key success objective at Salman Bin Abdulaziz University (SAU) strategic plan is to develop and implement an efficient Preparatory Year program (Salman Bin Abdulaziz University, 2012). According to the competency-based approach, the development of such a program needs to recognize the required core competences, and identify their related learning outcomes. This research is part of university endeavors to develop an efficient preparatory program that assists students to master these higher-education competencies and meet the national admission level standards.

This study, hence, aims to achieve two main objectives: first, identify the key success competencies for admission at SAU, and, second, to develop a list of comprehensive outcomes for each key competency.

Achieving these two objectives is crucial to design the assessment criteria to diagnose students' deficiencies and thus create the curriculum that will facilitate admission, and subsequently, academic performance at the University. The authors stated the problem of this research in the following questions:

1. What are the University admission-level core competences for the Bachelor programs?
2. What are the learning outcomes students should achieve in each core competency to meet the admission performance standards?

## **LITERATURE REVIEW**

The authors consider it imperative to highlight two focal topics: The Gap between Secondary and Post-Secondary Education on the one hand, and Goals Oriented Education and Competency-Based Program on the other as in the overview of the related literature.

### ***The Gap between Secondary and Post-Secondary Education***

The widening of participation in higher education and the international emphasis on promoting successful progression and high retention have always been the guiding factors for creating the best learning conducive environments. Promoting such successful progression cannot be achieved unless the higher education system designs a mechanism to ensure the adaptability of system inputs to the system processes and outcomes. Orientation programs, supplementary courses and preparatory year are examples of the different options that universities follow to bridge the gap between secondary-school capabilities and higher-education success requirements.

The findings of higher-education studies have implications that reflect the importance of generic or soft skills for business success and workforce. However, many higher education institutions maintain a stronger emphasis on subject-specific knowledge and skills when compared to soft skills and higher cognitive skills (Osman et al., 2012; Marginson & O'Hanlon, 1994). Research findings also conclude that higher education initiatives still require some radical rethinking if transferable skills are to be addressed seriously to help such students to make their learning outcomes match the real working market (Kemp &

Seagraves, 1995). Thus, universities attempting to offer such programs should heed the foregoing to bridge the gap between secondary school outcomes and college requirements.

First Year Experience program is one proposed option to address the needs of matriculating students. It was designed to supplement the necessary academic and life skills for new students at university. The design of the program is customized for each corresponding university according to the students' needs. This made the program pragmatic and efficient; not only for knowledge increasing, but also for students' life skills and attitudes towards university life and higher education in general (Schrader & Brown, 2008).

As the universities across the United States are struggling with student retention and attrition, interventions have been designed to encourage retention. Wolfe and Kay (2011) created an outdoor orientation program and explored participant perceptions. The six days' program included: challenge course, canoeing, camping, and a four-mile concluding run. Results of program completion indicated that the participants developed higher commitment to the university, transition to university life, and emotional, social, personal growth as well as the positive relationships with their colleagues.

In Japan, identity development in the learning sphere is critical for adolescents' transition from high school to university. Sugimura and Shimizu (2011) designed an intervention program to facilitate identity formation and empirical evidence showed that this program helped university freshmen to develop their own ideas and styles about learning, and enabled them to help each other to develop their identity. The University of Toronto created a one year transitional program to help aboriginal Canadian students to prepare for admission. A study of 22 program completers showed that the program helped students to address some educational barriers and increased students' self-confidence (Antone, 2011).

"Passport to Flexible Learning" was created by Central Queensland University in Australia to introduce first-year university students to interactive teaching technologies. The University introduces the program as a five days' workshop during the university's orientation week (Thompson, 2001). Moorhead State University (Minnesota) designed "The New Center for Multidisciplinary Studies" to help attracting and retaining nontraditional high-risk students. Such a program is an example of real professional work that meets high educational mission standards (Bolton, 1993).

In general, a Gap Year or a Year Out treatment is a break in students' educational continuum usually taken between leaving school and starting university (Jones 2004). This treatment may last a year, just a week, or probably even a few days. From the perspective of the youth sociological studies, it is an important transition for some young people to move from adolescence to adulthood (King, 2010).

### ***Goals Oriented Education and Competency-Based Programs***

Competency-Based Education (CBE), Role-Based Education (RBE), Performance-Based Education (PBE), and Outcomes-Based Education (OBE) are titles of movements that were launched during the sixties and seventies of 20<sup>th</sup> century. In despite of some slight differences between these movements, all of them were a response to the USA demand to repair educational system to focus on real tangible and measureable outcomes as well as moving from Subject-oriented to Goals-oriented Education (Qandile, 2010). These movements embedded under what we can call the philosophy of performance which still shining and consistent with contemporary higher education orientations.

The momentum recovery of competency-based education nowadays is a type of reflection to the significant restructuring of work in knowledge and industrialized economies. According to this contemporary role of higher education, the competency movement is about creating a more productive labor force and it does so by redefining work as a set of transferable or 'soft' generic skills that is possession of the individual (Windsor et al., 2012). Reviewing competencies approach literature give

enough evidence that this approach has a key role in the process of creating significant transformation that lead towards a new teaching and learning paradigm in higher education (Lozano et al., 2012).

Recent literature shows that there is a certainty within educators that competency-based approach is an important success option for next generation learning and there is still an efforts needed to enhance the strategies and skills for advancing new competency-based options (Sturgis et al., 2011). Hence, competency-based education is recently an adopted approach in several educational disciplines in higher education.

Abbasi (2013) dealt with the global perspective on competency-based accounting education and reviews the positions and pronouncements on accounting education of the key global players in order to provide a contemporary accounting education based on competency development approach.

In medical career, research indicates that traditional methods used to train residents to become orthopedic surgeons are not efficient as they didn't offer evidence-based learning outcomes. The reduction in resident work hours limits the time available for clinical training, which has resulted in some calls for lengthening the training process. However, this issue can be address when the training focus on a program that allows residents to graduate from a rotation based on demonstrated competency rather than on time on a service (Alman et al., 2013). In general, efforts to improve medical higher education are include adopting a new framework based on six broad competencies defined by the Accreditation Council for Graduate Medical Education. Many professional groups and task forces are working to examine the advantages and challenges of this competency-based educational framework and to refine specific competencies by developing detailed milestones (Weinberger et al., 2010).

Identification of competencies related to public health discipline and interdisciplinary domains are now required for guiding accreditation, curriculum planning, and the measurement of student achievement in both graduate and undergraduate education. Nevertheless, learning and assessment methodologies are still in need to large efforts that led to the consideration and development of strategies for promoting outcomes-based educational performance and accountability (Calhoun et al., 2011).

In Information Systems (IS) discipline, the dominance of Enterprise Resource Planning systems (ERP) raised the standards of specialists needed to gain success in field projects. Therefore, university increasingly pressurized to supply graduates with the appropriate competencies through adopting a hands-on approach for teaching ERP in Information Systems degree programs. Proposing and implemented a comprehensive, competency-based education framework for ERP education was crucial to make students enjoy the hands-on use of the ERP system and have a positive improvement in self-efficacy and competencies (Scholtz et al., 2012).

Moon (2007) argued that existing educational strategy has failed to grow up creative citizens who can play leading roles in development in democratic environment. He proposed a competency-based education model that work parallel to the current system of manpower classification and selection. In this model, the identification of individual ability, talent, and aptitude is deemed to be the most important, and the key task of education is self-actualization through recognition and cultivation of such talents and abilities. According to this trend, educators can reduce the relative weight of subject-centered education and introduce a competency-based curriculum. They can also introduce new intelligence theories in order to foster the development of students' talents, aptitudes, and potentials. In addition, they can make use of positive psychology, which is a newly emerging field, the core concept of which is the belief that happiness in life depends on one's ability to develop and maintain positive feelings and emotions.

The allegation that Competency-based approach can't move beyond a somewhat atomized behaviourist to take advantage on deep learning is not true. The planned learning outcomes can be focus on teaching and

learning at more comprehensive competencies level. Along with this shift to these more complex 21st Century, goals comes a substantial challenge in order to match higher outcomes level (Balcaen, 2013).

For this reason, outcome-based education became one of the most significant global developments in higher education during recent years (Davis et al., 2007; Khalifa et al. 2012). It helps to yield successful examples in recent higher education reform and creating world class higher education institutions (Kennedy, 2011; Tontus et al., 2012). It helps also to identify students' expected performance and the way to assess and evaluate it (Kaliannan & Chandran, 2012; Anwar et al., 2012; Colley, 2008).

According to competency-based education, educators are working for re-engineering the educational system around a new era of learning design where failure is no longer an option. This means a deep transformation of education towards a new philosophy that demands moving from a time-based to a learning-based educational system. This new direction focuses on helping students to master learning where the objectives are measurable outcomes instead of just delivering them some knowledge.

This new direction of education requires a major change in the logic of program construction as goal/outcome oriented rather than content (discipline) oriented. This change makes program design more difficult as the knowledge experts will not be able to perform this mission alone. Literature highlights the important of sharing experience with the stakeholder-experts in the process of the program design. Hence, knowledge experts in different disciplines, educators and inter-professional experts should all share the feedback of the creation of a competency-based program (Banfield & Lackie, 2009).

Other studies focused on competencies' statement technique basically depending on current professions or field experience guidelines. These guidelines help provide general a framework with detailed competencies. In a further phase, educators can refine the competency list through stakeholder interviews and expert feedback. The competency statements should employ certain initiatives, such as, the foundation for needs assessments, activity planning and development, and outcome measurement (McKeithen et al., 2011).

Abbasi (2013) proposed a global-view, system-based competency model comprising three stages of curriculum management based on system lifecycle:

1. Planning and design: The first phase involves the establishment of what competencies (learning goals/objectives), who (learner, facilitator, and other stakeholders), with (learning/facilitation methods and strategies), where (targeted placement in courses), and when (delivery modes).
2. Implementation: Curriculum implementation phase should employ an input-transformation-output-feedback system model.
3. Outcome assessment. Outcome assessment phase entails assurance of student-learning outcomes (formative assessment) and achievement of program performance goals (summative assessment) through a two-step process: learning measurement and feedback for closing the loop.

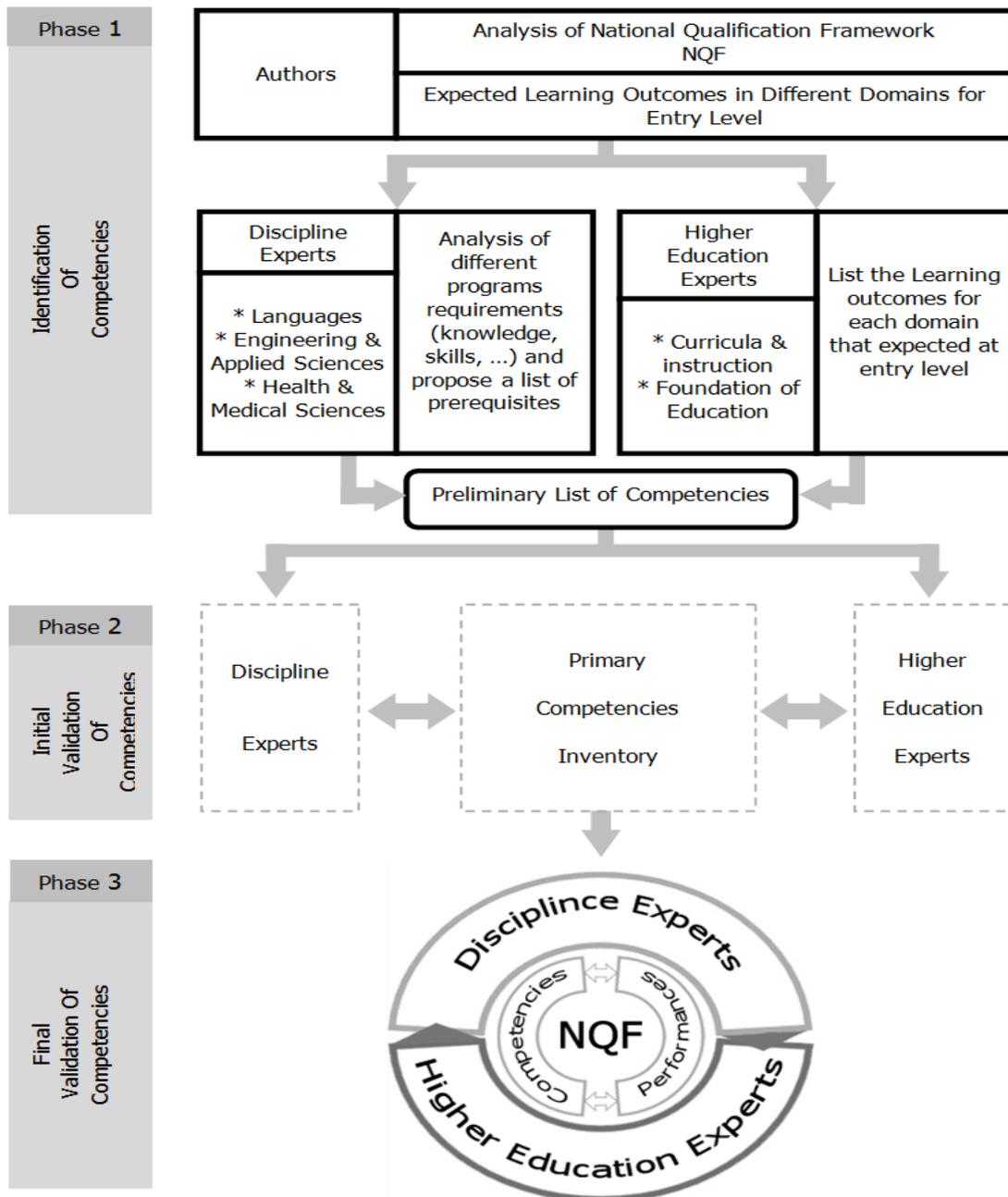
## **METHODOLOGY**

This study aims to identify the key success competencies for admission at SAU, and the learning outcomes regarding each key competency. The study follows the analytical descriptive method in order to achieve its objectives. This methodology includes the review of related literature as well as analyzing the National Qualification Framework (NQF) to conclude with the key success competencies for post-secondary admission level in different domains.

Based on the above literature, the authors proposed an operational model for the identification and validation of the competency inventory that includes competencies in different domains and outcomes associated with each competency (figure 1). Within the three successive phases of the model, authors and

distinguished experts in related disciplines and education worked to identify expected competencies and learning outcomes in the first phase, while the role of experts was essential to validate the competencies via brainstorming and discussion sessions in the second phase. In the third phase, disciplines' experts and higher education experts worked for achieving final validation of competencies. In addition, this phase guarantees sustainable improvement and validation for competencies inventory through disciplines' experts and higher education expert's permanent cooperation.

Fig.1: Competency identification and validation model



## RESULTS AND DISCUSSION

The authors reached a valid competency inventory for admission at SAU. This inventory includes seven main components: (a) competence in the language of instruction (English), (b) competence in the language of instruction (Arabic), (c) competence in Information Technology communication skills, (d) competence in knowledge and cognitive skills of statistics and numerical, (e) competence in knowledge and cognitive skills of Mathematics, (f) competence in knowledge, cognitive skills and psychomotor skills of Science (Biology), (d) competence in knowledge, cognitive skills and psychomotor skills of Science (Physics). Table 1 illustrates the number of performances embedded in each competency.

Tab.1: Competences, performances and domains

Main Competencies	Domain of Competency	Number of Performances
Competence of Language of instruction (English)	Competency in reading	10
	Competency in writing	10
	Competency in listening	10
	Competency in speaking	10
	Competency in vocabulary and grammar	10
Competence of Language of instruction (Arabic)	Competency in reading and understanding	19
	Competency in grammar	20
	Competency in writing	12
	Competency in speaking and composition	12
Competence of psychomotor skills of Information Technology communication	Competency in involve manually	335
Competence of knowledge & cognitive skills of statistics and numerical	Competency in recall, present and understand	28
	Competency in apply, investigate and think critically	10
Competence of Knowledge, cognitive skills & psychomotor skills of Mathematics	Competency in recall, present and understand	25
	Competency in apply, investigate and think critically	9
	Competency in involve manually	1
Competence of knowledge, cognitive skills & psychomotor skills of Science (Biology)	Competency in recall, present and understand	26
	Competency in apply, investigate and think critically	4
	Competency in involve manually	6
Competence of knowledge, cognitive skills and psychomotor skills of Science (Physics)	Competency in recall, present and understand	39
	Competency in apply, investigate and think critically	31
	Competency in involve manually	12

Since this study is part of multi-phase project to develop preparatory program at SAU, the findings of this research phase are essential to define objectives and learning outcomes for the preparatory program that can work as a university success gate as acknowledged in the SAU strategic plan.

Building on the proposed outcomes of this study, the university will be able to:

- Structure the required key success competencies for admission level in different learning domains according to the NQF.
- Develop valid and reliable assessment instruments for admission diagnostic and placement purposes.
- Develop a competency-based program to bridge the gap between high-school graduate competencies and admission-level competencies with pedagogical approaches designated for the remedial of prospective students' learning efficacy.

## CONCLUSION AND IMPLICATIONS

According to NQF, graduates of Saudi high-school should meet eligible standards for postsecondary admission as stated in university programs. If not, students should complete preparatory or foundation studies designed to ensure that they possess the necessary language and study skills, as well as academic background to succeed in postsecondary programs.

SAU's strategic plan identified high-school graduate competence as a main challenge, and prioritized the strategic objective of developing a preparatory program as a key success area that may guarantee better intakes for university programs. The emergent interest in measuring educational efficiency and outcomes fore grounded the competency-based education in higher education. Based on the competency-based approach, SAU planned a project study to develop a preparatory program that aims to improve candidate competencies to meet admission standards in different programs at the university.

This study is the first phase of the project that focuses on identifying the key success competencies for admission level and developing a list of comprehensive outcomes lying beneath each key competency. Deriving from the literature review and distinguished experts, the authors reached a valid competency inventory for admission at SAU. The inventory includes seven main components include 639 performances cover different cognitive and psychomotor learning domains.

Achieving this competency inventory is an indispensable source to design the assessment criteria in order to diagnose students' deficiencies in knowledge and skills. It's also a cornerstone to develop the necessary preparatory program for promoting admission prerequisites, and subsequently, academic performance at the University.

Such a development is imperative to attest that newly established universities like SAU are capable of offering support to the higher education system in Saudi Arabia and grapple with the challenges of globalization and the implications of the digital era as well.

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## **ACKNOWLEDGEMENT**

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Abstract and paper for HICE 2014 Refereed Proceedings

**Title:** Do they stay or do they go? The first destinations of international student graduates

**Topic area:** Higher education

**Presentation format:** Paper session

**Description:** Understanding the changing nature of international students is key to providing educational packages which meet their needs, equip them for life and career after graduation, and help to make our qualifications a first choice in today's competitive higher education environment. A recent survey of international graduates from the past five years from a New Zealand institution highlights the need to see this population group less as sojourners and more as potential citizens.

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**Abstract**

*International student graduates' actual outcomes related to employment, career development, enrolment into higher qualifications and achieving permanent residence make interesting reading. These outcomes often come as a surprise to those who work most closely with the students - the faculty, academic advisors and learning support staff - who have long recognised this population group as high-users of academic development services. This paper discusses the early findings from a survey of international graduates from a New Zealand institution over the last five years. Our data support the phenomenon widely discussed in the recent literature: that temporary residence as a student is for many, only ever seen by many as a transitional stage, and in fact a large proportion of New Zealand's international students are prospective migrants. Further, a number of studies indicate that this trend is equally apparent in North American, and other western providers of higher education, English language qualifications. The pathways by which the students achieve their goals begin with the programmes they study and the qualifications they achieve, and lead into the decisions students make about their first destination upon graduation. Our research extended the survey results with a number of interviews to gather individual stories to get an idea of the explanations and motivations that lie behind the larger numerical patterns. The important corollary for teaching and advising staff is to recognise that we are no longer solely preparing international students to achieve a New Zealand qualification to enhance their employability in their home country. Now we are preparing them for life as a New Zealand citizen, and we need to re-examine their needs and what we are providing according to this light.*

**Introduction**

Studies demonstrate that higher education graduates, whatever their subject or level of study, have higher earnings than workers with no qualifications (NZ Vice-Chancellors Committee, 2008). New

Zealand students can be relatively laid back about recognising this imperative, but not so the citizens of many of our neighbours, especially from Asian and Pacific Island nations, who make up the largest body of our international students, although recent trends have seen growing cultural diversity. Overall, the number of international students studying in our tertiary sector has increased dramatically in the last decade, alongside the number of countries represented.

New Zealand is one of the five major host-countries for international students in the English-speaking world, together with the United States, Canada, United Kingdom and Australia (Holloway, 2004) and export education is now our fourth largest export industry, contributing at least \$2.1 billion to our economy and about 32,000 jobs (Merwood, 2007). International students currently make up around 13% of the student roll in New Zealand universities, compared to an average of more than 20% in Australian universities, so that most sector analysts believe there is still significant growth to be had – even given the global economic recession (Terra Nova Consultancy, 2010). In fact, so keenly are many of our higher education providers pursuing full-fee paying international students that some commentators are warning such “academic capitalism” and “feverish recruitment” (Brebner, 2008, p. 2) will lead to inflated expectations and making promises that we can’t keep.

What are we offering? In an increasingly globalised world and at a time of economic downturn, there is growing demand for skilled professionals with a range of skills that respond to the requirements of business, technology and culture. Commerce and business are by far the dominant aggregate area of study for international students in this country (56.2%), followed by Social and Behavioural Sciences (11.8%) and Mathematics and Information Sciences (9.2%) (NZ Vice-Chancellors’ Committee, 2008). Naturally, demand for particular skills and occupations rises and falls over time, and sometimes in quite a short time frame. This is less of a concern if we position ourselves as providers of an education qualification that students take back to their own countries, to do with what they will; it is far more significant if our international students are undertaking study with the assumption that it will lead to a job and long-term residency in this country.

Both New Zealand’s Ministry of Education and the Australian Council for Educational Research regularly conduct large-scale surveys of international students in this country and concur that while ESANA students (from European and South American countries, North America and Australia) rate travel and adventure, beautiful scenery and New Zealand lifestyle as important, Asian students - the majority of our student body - make choices about study destination according to perceptions of employment and residency opportunities, and quality of education providers (AUSSE, 2010; Deloitte, 2008). As Craven (2009) notes, temporary residence as a student was only ever seen by many of our international students as a transitional stage on the path to becoming a longer term entrant into our wider society. Where a decade ago, it was reasonable to expect that international students were aiming to achieve a New Zealand qualification to enhance their employability in their home country, we are now preparing them for life as a New Zealand citizen (Fraser & Simpson, 2012).

## **Our study**

The research project we will describe at the HICE conference is still underway at the time of writing this paper, and so our discussion here is largely confined to study goals and objectives, and preliminary findings from pilot participants. The overarching purpose of our investigation is to identify where the international graduates from our institute go after completing a qualification with

us, and whether they have been successful at moving from study into their preferred destination. Our specific research question was “How do international students’ first destinations after completing their study align with their expectations on entry?” And our goals were:

- To provide useful data for the International team about graduates’ successes and pathways following study at our organisation, and assist with the analysis of which programmes are creating the best opportunities for particular groups of students. This information would be directly useful for international marketing planning and decision-making.
- To understand more about our international students’ intentions and motivations in undertaking a study programme, recognising that these may encompass objectives other than the purely academic.
- To ensure that the programmes and delivery options we are promoting are aligned with students’ wants and needs, so that our international graduates feel that they have received the best possible outcomes and qualifications – and therefore become our ambassadors in the marketplace.

The proposed methodology uses two data collection instruments: a questionnaire and focus groups.

- The questionnaire uses Survey Gizmo software available through a link emailed to all international student graduates from the past 5 years whose contact details we are able to locate. Analysis will be partly statistical, identifying incidence and relativity of different responses, and partly qualitative, focusing on recurring themes, enablers and barriers. We have also included the option to identify stories of graduate success that students wish to share (through a comments box on the questionnaire, and consent to make further contact to discuss these and gather more details as necessary). International marketing materials already use student profiles like this, but it is likely that there are a lot more individual stories which we don’t know about – this questionnaire offers an added opportunity to build our database of role model alumni. We have had approximately 400 international students graduate over the past 5 years, and would hope for a 33% response rate, or higher. The questionnaire has been piloted with 12 students from a target group of 27, whose responses are included in the following section of this paper.
- The focus groups will be convened to address results from the questionnaire and the topics where we would like more information. Probably three or four groups will be facilitated, depending on student uptake, with 4 - 6 international students in each, grouped according to campus (and/or course if there are sufficient participants). We will offer the students lunch/refreshments as an incentive to participate, and also to set an informal and supportive atmosphere to encourage free and frank sharing of personal agendas and experiences.

Overall we hope to cover areas such as the relative importance/value/prestige of particular qualifications; where students see career opportunities in their home countries, in NZ, and abroad; awareness and targeting of Immigration wanted skills lists; awareness and goals of higher qualification pathways in NZ, home countries and abroad; job availability; and permanent residence aspirations. We also hope to gather specific stories of experiences about congruency or mismatch between study experience and destination objectives.

## Early findings

The 12 students who participated in the pilot study were spread across both genders and three age ranges: 18-24 (5 students); 25-34 (3 students) and 35-54 (4 students). However where this group are less likely to be representative of the larger target population is in nationality: half the sample came from India; and in fields of study: 11 were students from our School of Business, and one was a School of Applied Science graduate. Key findings were:

- While the majority of students knew “some”, “quite a lot”, or were “very well informed” about the institution, closer to a quarter were able to respond in the same way about the course they enrolled in. Most had got their information from the institution’s website, local education agents, contacts already in this country or a combination of these. None had seen course brochures or descriptors prior to enrolling.
- Job prospects in this country were the highest ranked determinant of study selection:

Item	Total Score <sup>1</sup>	Overall Rank
Job prospects in New Zealand	52	1
Career opportunities	50	2
Permanent residency in New Zealand	48	3
Lifestyle experience	41	4
Study pathways to higher qualifications	31	5
International qualification	28	6
Job prospects in your home country	24	7
Family	20	8
<b>Total Respondents: 11</b>		
<sup>1</sup> Score is a weighted calculation. Items ranked first are valued higher than the following ranks, the score is the sum of all weighted rank counts.		

- Students generally responded “fantastic” or “quite good” to questions about how they found the city, the campus, their teachers, the support from the International office and the support from academic learning advisors. Satisfaction decreased for questions about how they found the level of their programme, and whether they felt there was enough information about how the programme could lead to further study or employment.
- Half of the 12 students in this pilot had stayed in New Zealand after graduation; all but one were working in their professional field. Of those who had left the country, one was on holiday, one unemployed, and two each were working in either a professional role, or a job unrelated to their qualification.
- Some of the students included a paragraph outlining their post-graduate journeys, and some included useful comments and suggestions about study / employment alignment, which will inform the conference presentation when all final results are available.

## Conclusion

Many institutions collect their own data about graduating students and what they plan to do upon leaving, including whether they are employed, plan to attend graduate programmes, are still seeking employment or have other plans. Such information can: inform marketing initiatives and may provide statistics which can be published to agents and prospective students of evidence of the value of studying with the organisation; assist with International planning and resource allocation into particular markets; and highlight learning and teaching issues regarding specific needs in programme content or soft skill development. This type of research has not been previously undertaken by our organisation.

Early indications are that the exercise will be extremely valuable, and the data already gathered from this small pilot sample offers some interesting insights. First, it looks as if we may be able to confirm national trends within our own student body, such as the Ministry of Business, Innovation and Employment's (2010) study, which found around 31 % of fee-paying international students transition to work and/or permanent residence in New Zealand; and 68% of former international students were in full time employment 18 months after gaining permanent residence in New Zealand with 31% in professional occupations and 62% in a skilled job.

Second, it would appear that many students have clear mid and long term objectives when they apply to study with us, but may not always be clear about how the course they enrol in will assist them to achieve this. We may need to change out practices with how we communicate with prospective students – the questions we ask and the level of information we provide about course content, level and pathways. We look forward to the opportunity to discuss this further with conference delegates, or to correspond with interested colleagues who read these Proceedings.

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**Conference Submission:** 12<sup>th</sup> Annual Hawaii International Conference on Education

**TITLE:** Does Providing Asynchronous Audio Feedback Enhance Faculty Presence in a Virtual Classroom?

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**ABSTRACT:** Does Providing Asynchronous Audio Feedback Enhance Faculty Presence in a Virtual Classroom?

This case study involves providing audio feedback in addition to text-based feedback for student assignments in asynchronous courses. While prior research has demonstrated that participants in online courses can build effective learning communities through text based communication alone, we believe the inclusion of an auditory element will strengthen the rapport between instructor and student by providing more effective and personalized constructive comments of the student's strengths and areas of opportunity to improve future assignments. We also believe the inclusion of an auditory element will result in enhanced student learning and engagement in the classroom. Over the course of several terms and courses including introductory courses and courses taken later in a student's program, students in the study will receive both asynchronous audio and text-based feedback on their written assignments. We expect our findings to reveal students' level of satisfaction with embedded asynchronous audio feedback compared to asynchronous text only feedback and improved student learning; specifically, we expect to collect the following data: (1) whether audio feedback was perceived to be more effective than text-based feedback for conveying nuance; (2) whether audio feedback was associated with feelings of increased engagement in the course; (3) whether audio feedback was associated with increased retention of content; (4) whether audio feedback was associated with the perception that the instructor cared more about the student; thus, building a better rapport between instructor and student; and (5) whether audio feedback was associated with improved student learning outcomes.

# English Conversation Practice Based on Thinking Ability

Otsuki, Atsuko (Sagami Women's University)

Carreira, Matsuzaki Junko (Tokyo Keizai University)

**Key Words:** Applied Linguistics, Verbs, Productivity and Flexibility, Cue Word, Thinking Ability, English Conversation Practice

## 0. Introduction

Practical English ability as a common language communication skill is strongly demanded by international society. In Japan, however, many students seem to have trouble in studying English. On the other hand, fortunately, they never lose interest in speaking English. I suppose that this incongruous situation arises from the fact that many learning methods for 2<sup>nd</sup> languages depend on rote memorization. Therefore this study focuses on the thinking ability of human beings and searches for the possibility of “English Conversation Based on the Thinking Ability” in terms of applied linguistics. We suggest the use of the productive and flexible characteristics of verbs to induce this method, showing the theoretical back grounds and the data as the result of research that we conducted and analyzed for this study. Firstly, focusing productivity and flexibility of verbs in terms of linguistics, the theoretical background of “English Conversation Based on Thinking Ability” will be explained. Secondly, a survey and preliminary experiments conducted in order to determine the adequacy of our assumption will be reported upon. Finally the possibility of “English Conversation Practice Based on Thinking Ability” will be examined.

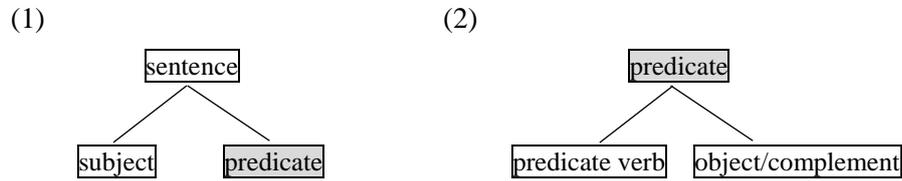
## 1. Theoretical Background

Verbs are known as having an important syntactic role which governs word distribution in a sentence. VP (Verb Phrase) Internal Subject Hypothesis, for example, defines verbs as having syntactic dominancy. On the other hand, in semantic discussion, Otsuki (2010, 2008, 2002, 2001) proposes that verbs play a critical role in generating metonymical expression and meaning though process of the generation in metonymy seems to be arbitrary. Since the high productivity and flexibility of verbs are defined in theoretical linguistics, the same must be true of language performance because both relate to human beings. Otsuki (2013) also proposes to apply the high productivity and flexibility of verbs to language performance of speaking English as a 2<sup>nd</sup> language.

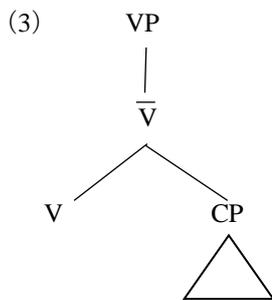
### 1.1. Productivity and Flexibility of Verbs

Diagram (1) shows that a sentence consists of a subject and a predicate. The predicate

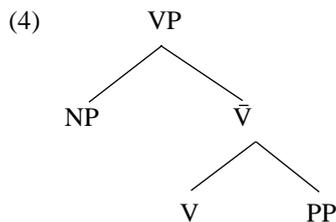
consists of a predicate verb (VP), an object and a complement as shown in (2).



In other words, a sentence is made up of 2 words at least. When it is a complex sentence or a compound sentence, the number of word in the sentence increases. Suzuki (1990:55) says that whether the sentence is complex/compound (CP) or not, the choice of the object, the complement and the modifier is determined by verbs (V), as shown in (3).



VP Internal Subject Hypothesis states that the verb has an important syntactic role which governs word distribution in a sentence, and proposes that subjects originate as specifiers in phrases headed by a lexical verb in terms of X-bar syntax, as shown in (4).



## 1.2. Metonymy and Verbs

Metonymy<sup>1</sup> contributes to linguistic problems such as polysemy and meaning extension, which has a productive and flexible mechanism. Though word meaning through metonymy is

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<sup>1</sup> Metonymy is one of the most basic cognitive system of human beings, is a device for referring one thing to another. Its function is to transfer meaning and it enables us to employ the same expression to refer to intuitively distinct sorts of things. (Nunberg, 1996)

ambiguous on account of these linguistic phenomena, the target meaning can be identified with certainty.

The meaning of the sentence in (5), for example, is obviously ambiguous in that we can infer either that *John began to read a book* or that *John began to write a book*. The NP (Noun Phrase), *a book*, does not satisfy the type required by the predicate verb *begin*, which normally selects semantically for action. Then the predicate verb coerces the NP into an event denotation. In other words, the verb coerces the NP into an event denotation in TELIC<sup>2</sup> in the qualia structure (QUALIA) of *book*, as in (6).

(5) John began a book. (Pustejovsky (1995:203.204))

(6)

$\begin{array}{l} \mathbf{begin} \\ \left( \begin{array}{l} \mathbf{EVENTSTR} = \left[ \begin{array}{l} E_1 = e_1: \text{process} \\ E_2 = e_2: \text{event} \\ \mathbf{RESTR} = < 0_\infty \end{array} \right] \\ \mathbf{ARGSTR} = \left[ \begin{array}{l} \mathbf{ARG1} = x: \text{human} \\ \mathbf{ARG2} = e_2 \end{array} \right] \\ \mathbf{QUALIA} = \left[ \begin{array}{l} \mathbf{FORMAL} = P(e_2, x) \\ \mathbf{AGENTIVE} = \text{begin\_act}(e_1, x, e_2) \end{array} \right] \end{array} \right) \end{array}$	$\left( \begin{array}{l} \mathbf{book} \\ \mathbf{ARGSTR} = \left[ \begin{array}{l} \mathbf{ARG1} = x: \text{info} \\ \mathbf{ARG2} = y: \text{physobj} \end{array} \right] \\ \mathbf{QUALIA} = \left[ \begin{array}{l} \mathbf{FORMAL} = \text{hold}(y, x) \\ \mathbf{TELIC} = \text{read}(e, w, x, y) \\ \mathbf{AGENT} = \text{write}(e', y, x) \end{array} \right] \end{array} \right)$
y)	(Ibid.)

On the assumption that Coercion<sup>3</sup> leads to the dissolution of type error, a variety of metonymical expressions used in the scenarios of two English movies were analyzed in Otsuki, (2008). As a result of the analysis, the following seven kinds of illustrations of linking models in Figure (1) were produced. In the seven linking models, we notice that the predicate verb, P.V. in Figure (1), plays a crucial role in the operation of coercion to make metonymical expressions possible.

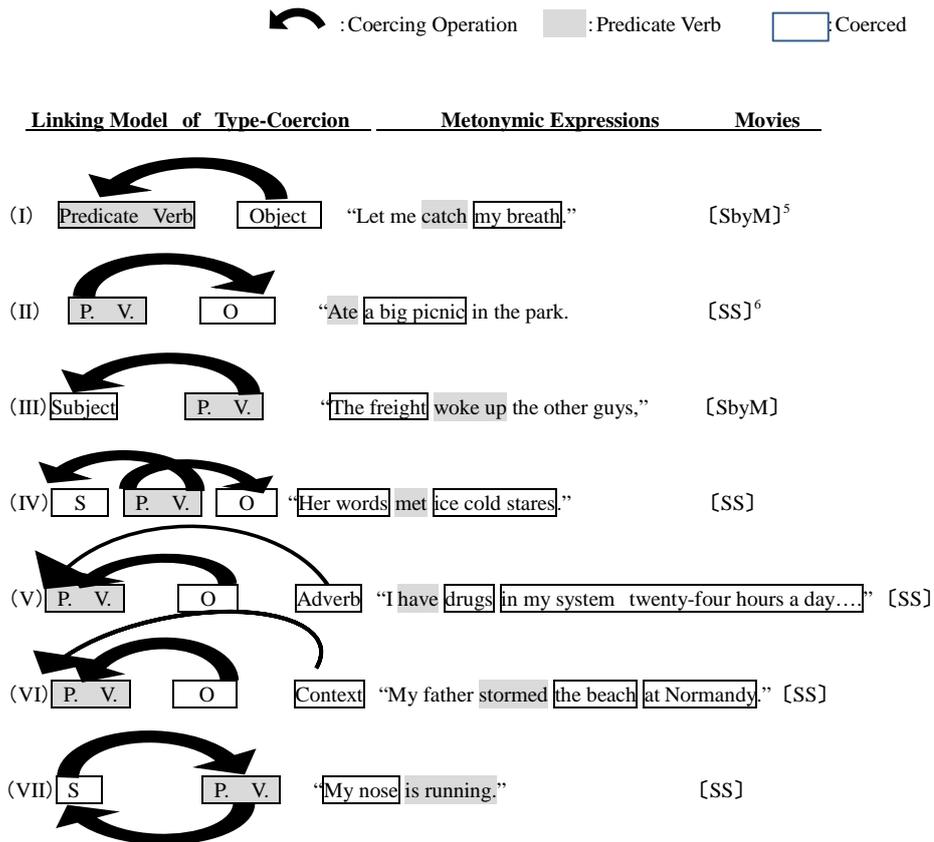
Both our syntactical and semantic discussions on the verbs demonstrates their striking productive and flexible characteristics. By applying the features of the verbs to 2<sup>nd</sup> language

<sup>2</sup> TELIC: In Generative Lexicon (GL), TELIC (The Telic Role) is a subordinate concept of the qualia structure (QUALIA) and attributes purpose and function to the object.

<sup>3</sup> Coercion: a semantic operation that converts an argument to the type that is expected by a function, where it would otherwise result in type error. (Pustejovsky, 1995)

performance of English, this paper propose a new type of English learning method which doesn't rely on memory working but on thinking ability, that is, "English Conversation Practice Based on Thinking Ability". This study proposes to use a verb as a cue-word<sup>4</sup> to build up a sentence when speaking English.

Figure (1) "Linking Models of Metonymical type-Coercion" (Otsuki, 2008, 2010)



To search for the possibility of "English Conversation Practice Based on Thinking Ability" with a cue-word, a survey and experiment were conducted in this study. The following section reports on the data, analysis, and results from that process.

## 2. Survey and Preparatory Experiment

The survey and experiment were conducted in order to determine whether our assumption

<sup>4</sup> cue: a thing said or done that serves as a signal to an actor or other performer to enter or to begin their speech or performance.

<sup>5</sup> SbyM: a movie "Stand by Me"

<sup>6</sup> SS: a movie "The Sixth Sense"

from the theory was correct or not, and to answer to the following 2 questions. One is whether 2<sup>nd</sup> language learners of English employ the striking features of verbs, productivity and flexibility, when they speak. The other is whether there is any potential in this study to develop a new type of teaching or leaning method, entitled “English Conversation Practice Based on Thinking Ability” with a cue-word. The survey and experiment were carried out as follows.

**【Subjects for Investigation】**

1. 97 university students of 1<sup>st</sup> or 2<sup>nd</sup> year grade in Japan.
2. Majoring in Marketing, Economics.
3. Their English is low ~ middle level (= 3<sup>rd</sup> ~ pre-2<sup>nd</sup> of The EIKEN Test in Practical English Proficiency of Japan).
4. Most of them are weak in English.

**【Procedures of Preliminary Experiment】**

1. The term of investigation: July ~ August 2013
2. Firstly, the questionnaire asked the students why they are weak at English.  
Secondly, a 1 minute speech on “Which country do you want to visit?” made by the students was recorded. In the speech, the students were given 15 words; 5 verbs, 5 adjectives, 5 nouns as in (7). Using these 15 words, however, was not obligatory because their spontaneous English performance was required for observation.

- (7) VERBS : like, see, play, eat study  
 ADJECTIVES : happy, fun, beautiful, exciting, cool  
 NOUNS: people, building, hiking, cars, music

3. The number of words used in the speeches was counted for data.

**3. Results (1)**

As a result of the survey that asked the students why they are weak at English, “Understanding sentence structure is difficult.” was the most common response out of five choices as in Table (1).

Table (1) “Reasons Why They Are Weak at English” (the number of students)

Reasons	To memorize words & phrases	To Understand sentence	Pronunciation is difficult	Comprehension	Other reasons
---------	-----------------------------	------------------------	----------------------------	---------------	---------------

		structure			
Number of answers	24	51	27	21	6

The results of the preliminary experiment to investigate productivity and flexibility of verbs in English performance as second language of Japanese students are shown in Table (2) ~ (4). Table (2) shows frequency of verbs (per person) spoken in the 1 minute speech. Table (3) shows frequency of adjectives, and Table (4) shows frequency of nouns (per person) spoken in the same manner.

Table (2) “Frequency of Verbs per Person” (time)

“like”	“see”	“play”	“eat”	“study”	Average Frequency
19	14	17	12	16	15.6

Table (3) “Frequency of Adjectives per Person” (time)

“happy”	“fun”	“beautiful”	“exciting”	“cool”	Average Frequency
27	0	12	11	3	10.6

Table (4) “Frequency of Nouns” (time)

“people”	“building”	“hiking”	“car”	“music”	Average Frequency
2	2	2	0	2	1.6

The average frequency of the verbs is the most out of the three. The average frequency of verbs is 15.6 times in total and adjectives is 10.6 times. The average frequency of nouns is 1.6 times and the lowest by far. “People” is a collective noun, “Building” and “Car” are common nouns, “Hiking” is an event noun, and “Music” is an abstract noun. The features of each noun are various. The frequency of each noun, however, is almost the same. Therefore, it seems that nouns were selected arbitrarily in each speaker’s own context and not bound by the 5 nouns given for the speech.

#### 4. Results of Investigation (2)

Data in this section shows how the students built sentences in their 1 minute speech, whether they listed a word or a phrase which came to their mind or not, and how much they thought about sentence structures. This data leads to the discussion of using verbs as a cue word.

Table (5) shows the number of completed sentence and incompleting sentences

respectively in the 1 minute speech. The completed sentences and the incompleted sentences are classified into VERB, ADJECTIVE and NOUN in order to look at the difference between them.

Table (5) “Completed Sentence and Incompleted Sentence in Verb” (the number of sentence)

V E R B		A D J E C T I V E		N O U N		T O T A L	
Complete Sentence	Incomplete Sentence						
54	0	6	9	2	3	62	12

Table (6) shows how many “Presented Words” or “Non-presented Words” employed in the 1 minute speeches were used in a completed sentence or incompleted sentence respectively. Table (6) also shows that “Presented Words” featured in more completed sentences than “Non-presented Words”.

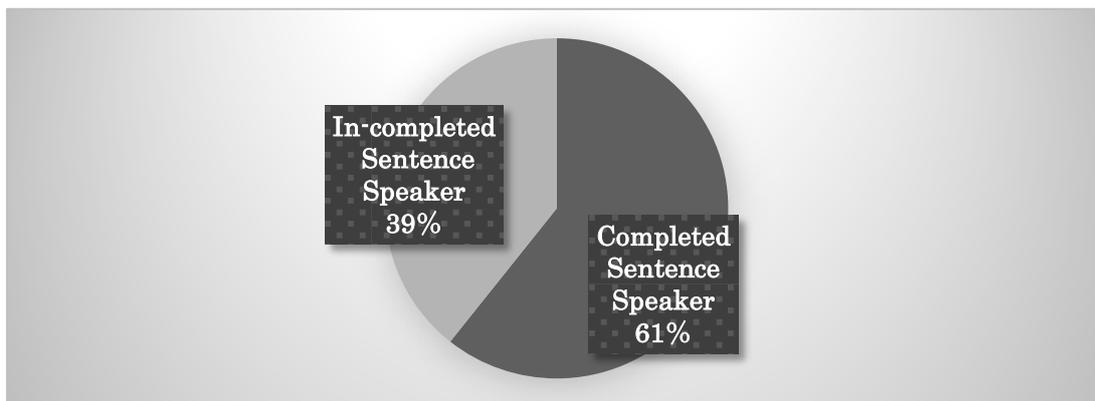
Table (6)

“Completed Sentence and Incompleted Sentence in Presented Words and Non-presented words” (%)

Presented Words		Non-presented Words	
Completed Sentence	Incompleted Sentence	Completed Sentence	Incompleted Sentence
62	12	31	15
84%	16%	68%	32%

Lastly, Chart (1) shows that 39% students can’t make a completed sentence. On the other hand, though 61% students can make a completed sentence, their sentences are mostly very simple and quite short. This means that most of them don’t speak English logically.

Chart (1) “Proportion of Completed Sentence Speakers to Incompleted Sentence Speakers” (%)



## 5. Observation

As a result of examining and analyzing the data with some linguistic theories, we can observe (a) (b) (c) as follows.

- a) From the survey results, we found that many students think they are weak at and cannot speak English because they don't understand the sentence structure of English. That is proved correct by the experimental data showing that 39% of students cannot make completed sentences, and that the completed sentences made by 61% of students are almost all very simple and quite short. In their logical English speaking, more improvement is necessary.
- b) Verbs are key in building a sentence and closely united with the subject, objects and complements in a logical discussion of theories. That means that verbs have productivity and flexibility in building a sentence. This assumption was proved in English language performance as a second language, by our survey and preliminary experiment.
- c) It was found that "Presented Words" shown in 1 minute speeches worked as a cue which generates a sentence. This means that our "English Conversation Based on Thinking Ability" can become real by using a verbs as a cue word.

## 6. Conclusion

In this paper, we verified the hypothesis of theories by an experimental approach. This means that our study will move on to the next stage. That is to investigate whether a verb cue word is effective in a real learning English conversation or not. And from the survey result, it is urgent that we develop English Conversation Practice Based on Thinking Ability.

Some problems to be solved are left. Firstly, the 15 words categorized into verb, adjective

and noun need to be clarified regarding how they are selected as Presented Words. What is the selection criterion? Secondly, the data obtained from the 1 minute speeches without using any Presented Words should be shown, because by contrasting and comparing these two datum, the effect of presenting words as cue words will be more outstanding.

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**An Exploratory Study of African American Graduate Students  
Perception of the Campus Environment**

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## **An Exploratory Study of African American Graduate Students** **Perception of the Campus Environment**

### ABSTRACT

The purpose of this research is to understand African American graduate student's experiences and perception of the campus environment. Campus climate and the experiences of undergraduate students are common areas of study. Numerous studies, both quantitative and qualitative, have provided important data on undergraduate student experiences with recommendations for improvement (Freeman, 1999; Fries-Britt & Griffin, 2007; Oseguera & Rhee, 2009). For example, Nettles (1985) concluded that regardless of their race, individuals in minority groups who attend institutions of higher learning felt racially discriminated against by faculty, administration, and fellow students. Nettles (1985) also found that students in minority groups were more likely to have a lower progression rate and grade point average than their counterparts, resulting in higher attrition rates. A climate of prejudice and discrimination both inside and outside of the classroom has become a chief factor accounting for the differences between the way in which Black students and White students experience college. While numerous studies have examined the campus experiences of undergraduate students, only a few (Nettles, 1990; Nettles & Millett, 2006) have examined the experiences of graduate students in the academic setting.

The Council of Graduate Schools reports that in 1996, African American students comprised 8 percent of graduate enrollment. By 2006, African Americans accounted for 13 percent of the graduate population (Guess, 2007). The most recent figures demonstrate a slight decline in enrollment of African American students to 12 percent (ACE Fact Sheet). The Council

of Graduate Schools (2008) highlights several issues regarding the increased number of racial and ethnic minority students attending graduate schools. They include funding, faculty preparedness for a changing population, and minority student perception of the programs and campus climate. The increase of African American students attending graduate school demonstrates a need to explore their perceptions and experiences, especially at predominantly white institutions (PWIs). As institutions strive to not only enroll, but also graduate students of color, perceptions of the environment must be examined as well as the more commonly examined structural variables of the availability of fellowships and assistantships. The goal of this exploratory study is to give voice to the African American graduate student's experience at an urban institution.

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Conference Proceedings Submission

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- 6) Abstract:

**SERVING YOUTH WHO ARE SERVING TIME: A STUDY OF THE SPECIAL  
EDUCATION SERVICES FOR INCARCERATED YOUTH IN A SHORT-TERM CARE  
FACILITY**

This study examined the communication between sending court and community schools of a County Office of Education's (COE) Alternative Education program and the receiving juvenile detention facility of a county in a Western state and how the communication between the two facilities affected the level of special education services provided to incarcerated youth, specifically the occurrence of 30-day placement IEPs. The juvenile detention facility was selected as a site because it was a lighthouse program, one of the few chosen to pilot the juvenile detention alternatives initiative (JDAI). JDAI sought to lower the number of incarcerated youth through viable

alternatives and have a focus on interagency collaboration to better serve the myriad needs of the youth incarcerated within the facility.

A mixed methods descriptive approach was used in the study with six different instruments used for data collection; 1) intake and exit sheets, 2) questionnaires, 3) formal interviews, 4) researcher field notes, 5) photographs, and 6) observations, document collection, and informal interviews. The instruments were administered over a 90-day period, with intake/exit sheets ceasing after a 60-day period. The remaining 30 days were used to conduct formal interviews with administrators for both programs and to assess the 30-day placement IEPs that took place.

This study yielded three main findings: 1) the intake process at the juvenile detention facility is not procedurally consistent and lacks a thorough educational history component, 2) there is a limited level of interagency collaboration between the COE and juvenile detention facility, and 3) incarcerated youth with special education services are not receiving their 30-day placement IEPs.

These findings are indicative of a continuum of barriers that still persist in providing special education services for incarcerated youth. Despite implementing policies and procedures to facilitate intake and interagency communication, issues with intake procedures and interagency communication still persisted and interfered with a lighthouse juvenile detention facility providing the incarcerated youth the special education services required by law.



**1. Title of the submission.**

iCulture Rules!: Online-learning and its utility to Higher-Education in the Anglophone-Caribbean.

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**iCulture Rules!**

**Online-learning and its utility to Higher-Education in the Anglophone-Caribbean.**

**Aims**

I seek to define online-learning (as an integrative application of Information Communication Technologies (ICTs)), weigh its effects on teaching and learning, and examine its utility in Caribbean higher-education. I firstly consider the technical components of online-learning. Secondly, I discuss the environment: including institutional policy,

democratization, quality-assurance, and the rise of the megauniversity. Lastly, I discuss the coalescence between tools, audience, and environment in fulfilling the needs of a Caribbean learning community.

Online-learning as an application of ICTs and the networked worldwide-web, makes teaching and learning “even more ecological and evolutionary” (Kelly, 1994, p. 394; Louisy, 2001) than before. There is a rise of what I call the iCulture. It is necessarily iNdividualistic and stems from abilities to align the functionalities of digital media to personal need. Within education, the iCulture harnesses ICTs and the new digital tools to provide life in a candy store where student-centred, user-friendly domains can be tailored to address iNdividual learning needs. The iCulture’s ability to create individually-focused, student-centred products lies in contrast to charges that online-learning disrespects contextual peculiarities of learning sites and so creates one-size-fit-all-models that Mc Donaldizes education (Ritzer, 1996). In fact, as rapid change revolutionizes jobs, online-learning includes training at the work place that can deliver skills just as they are required for performance (Clegg, Hudson, & Steel, 2003, p. 49; Larreamendy-Joerns & Leinhardt, 2006, p. 571), and increases opportunities to a variety of students, including returning and working students, benefitting from its time-place flexibility (Cantrell, O’Leary, & Ward, 2008, p. 554).

Indeed, online-learning has contributed to historic expansions in student-enrolments worldwide. Still, the huge gaps in accessibility to, and resources for, higher-education research between developed, developing, and least developed countries continues to widen (UNESCO, 1998, p. 2). Just as large strides are made towards UNESCO’s Millennium Development Goals and Education For All (EFA) in primary and secondary education, participation in higher-education is still trying to be grown even within developed countries (Geith & Vignare, 2008, p. 1). In fact, in spite of “an unprecedented demand for and a great diversification in higher-education, as well as an increased awareness of its vital

importance for sociocultural and economic development” (UNESCO, 1998, p. 1), higher-education remains a scarce resource (Hiltz & Turoff, 2005, p. 64).

### **ICT – A Tool For Democratisation or Capitalist Globalisation?**

Within the Caribbean too, promotion of higher-education as a public good is critical (Leo-Rhynie & Hamilton, 2007, p. 6). However, the touted egalitarian and democratic aims in terms of wide access to varied populations (Bernard & Thompson, 2003, p. 97; Cantrell, et al., 2008, p. 548; Evans, 1995, p. 7; Gulati, 2008, p. 1; Larreamendy-Joerns & Leinhardt, 2006, p. 568) that online-learning offers seem to have been hijacked. There are charges of managerialist agendas to cheaply educate a maximum number of workers solely as labour-force skilled to the demands of the new knowledge-economy. The charges suggest subscription to a meta-narrative proposing the inevitableness of globalisation and the indispensability of ICTs to its propagation:- necessarily concluding the use of ICTs through online-learning to facilitate instruction across global spaces as a requisite and ubiquitous aim of higher-education (Clegg, et al., 2003).

Almost as proof of managerialist agendas, Massive Open Online Courses (MOOCs) and megauniversities may become lucrative investments as government subventions in education continue to decline. Higher-education has certainly been internationalized (Louisy, 2001, pp. 426-427), and as a tradable commodity within liberalized environments has proven a multi-billion dollar business (Larsen, Martin, & Morris, 2002, p. 858).

Regionally in the Caribbean, a general situational analysis of higher-education indicates major need to smooth out and expand access and enrolment across the region; to make ICT a more prolific and user-friendly mode of educational delivery; and for a Regional Accreditation Agency to maintain high quality standards (Tewarie, n.d., pp. 4-5) through quality assurance (QA) (Smith, 2011, p. 7; Thurab-Nkhosi, 2010).

The essay discusses then the possible value of online-learning to Caribbean higher-education, and indeed suggests that the utility of online-learning be decided on a case-by-case basis. Under consideration are the English-speaking Caribbean nations who gained independence between the 1960s and the 1980s (Ali, 2008, p. 1), and whose educational developmental agendas are set largely through the initiatives of the unified Caribbean Community (CARICOM). Comparatively, as overseas holdings, the Non-Anglophone territories are not considered.

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# A Preliminary Study on Succession of Health Care Information in Japan

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**Abstract:** In this study, we clarified whether or not one's health care information is communicated to relatives as well as willingness to communicate one's health care information via ICT to be utilized by children and relatives by conducting several surveys. Parents and guardians raising children and elderly people were the subjects for the surveys (total 740people). From the results, in regards to the group of elderly people, 77% of those who would like to utilize health care with ICT wish to succeed information on their health care to children and relatives. Studies to review an individual's health care information from the viewpoint of succession to others are extremely rare; thus this study could be very novel. Finally, we would like to propose a platform, a structure to create a record of local information.

## **Introduction**

The definition of health in the world is found in the WHO Constitution in 1948: “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.”

Japan as an eminent country of longevity began the “Healthy Japan 21” project from 2000 as a movement to maintain people’s health. In order to further promote health and prevent diseases for people with “Healthy Japan 21” as the core, the Health Promotion Act was promulgated on August 2, 2002 as part of health care reform. In regards to health care for individuals, various companies began to propose methods for health care for individuals by utilizing Information and Communications Technologies (ICT), including Omron Healthcare’s sales of a system called WellnessLINK beginning in 2010 that utilizes a tonometer with a communication function, with which records of measurement are utilized for an individual’s own health care. With any of the existing systems, data can only be viewed by the individual who manages health, a third party with specific authority, or a person authorized by the individual.

However, diseases develop, caused by genetic factors and environmental factors. If information on one’s own health can be not only utilized by the individual but also made known to and utilized by siblings, children and relatives including grandchildren and great-grandchildren yet to be born, it might be useful for health care for the relatives in addition to the individual. From this viewpoint, we clarified whether or not one’s health care information is communicated to relatives as well as willingness to communicate one’s health care information to be utilized by children and relatives by conducting several surveys. Studies to review an individual’s health care information from the viewpoint of succession to others are extremely rare; however it is not impossible as ICT has developed these days. We would like to propose the Local Information Platform (LIP), a structure to create a record of local information by storing connection between an object and person as well as among people in combination with geographical information. LIP is not only useful for rehabilitation in affected areas but also will become a learning tool for children.

## **The Study**

Diseases are caused due to various reasons, which can be largely categorized into two factors: a factor naturally carried by a person as a host and a factor caused afterwards outside of the host including the environment. The former is a genetic issue; therefore called a genetic factor, and the latter is called an environmental factor. At present, both genetic and environmental factors are considered to be involved in most illnesses (Yamagata, 2000). Not only unhealthy lifestyle habits are involved in lifestyle diseases including high blood pressure and diabetes; but it is being clarified at the genetic level that an individual’s vulnerability to illness, i.e., genetic factors, is also related. Lifestyle diseases are caused by multiple genes as well as multiple environmental factors; therefore are called multifactorial genetic disorders (Suzumori, 2003; Yamagata, 2000). People’s genetic information is compiled in databases mainly in relation to diseases, and On Line Mendelian Inheritance in Men is open to the public and widely utilized. Even if genetic information is interpreted, genetic factors are not everything that can determine whether or not a disease is

caused; therefore some form of care of environmental factors will be necessary when an individual considers prevention of illness. Human beings in an ecosystem are a biological existence in terms of cultural anthropology and at the same time is positioned as a cultural existence. Specifically, people are considered to adapt themselves to the ecosystem in two forms including “genetic adaptation” and “cultural adaptation.” It is considered that “‘cultural adaptation’ means that people’s lifestyle comes to have characteristics selected and succeeded in the environment” and “‘genetic adaptation’ means that tissues and cells comprising a human body come to have hereditary characteristics that survive natural selection in the environment as they live in the environment of a specific ecosystem” (Michinobu, 2011). Environmental factors seem to be emphasized more than genetic factors in cultural anthropology.

## Methods

In order to clarify the consciousness to the communication of health care information to family members, the following survey was conducted at two elementary schools and one senior center. We considered health care information includes not only medical history but also daily living in relation to environmental factors such as dietary records and sleeping hours.

### Survey 1

Target: 128 people in a municipal senior center in Saitama Prefecture, Japan

Period: July 2011

Method: Hearing survey using an interview method

Survey description: Gender and age of respondents; others are indicated in Fig. 1.

- |     |   |
|-----|---|
| 1   | Do you go to a regular hospital? (Yes/No)   |
| 2   | Does your family have a family doctor? (Yes/No)   |
| 3   | Do you communicate your illness as well as illnesses and causes of death of your ancestors to your children and grandchildren? (Yes/No) |
| 3-1 | Talked / Have not talked / Will talk in the future / Do not plan to talk in the future either   |
| 3-2 | Wrote / Did not write / Plan to write / Do not plan to write  |
| 4   | Are you aware of illness of your ancestors? (Aware / Slightly aware / Not aware very much / Not aware)                                  |

**Figure 1:** Awareness survey on succession of health care information

### Survey 2-1

Target: 385 parents and guardians of all students in a public elementary school in Tochigi Prefecture, Japan

Period: June 2012

Method: Parents and guardians of students were requested through home room teachers of the elementary school; a survey form was completed

Survey description: Gender and age of respondents; others are indicated in Fig. 2

### Survey 2-2

Target: 599 parents and guardians of all students in a public elementary school in Ibaraki Prefecture, Japan

Period, method and survey description: Same as Survey 2-1

### Survey 2-3

Target: 44 people in a municipal senior center in Saitama Prefecture, Japan

Period: July 2012

Method: Hearing survey using an interview method

Survey description: Same as Survey 2-1

<p>Health is supposed to be determined by heredity, living environment and natural environment.</p> <p>Food and health can be managed by taking photos and keeping notes along with the use of a PC or mobile phone so that they can be useful for health promotion. Would you like to utilize it? (check all that apply)</p> <p>1 Yes</p> <p>1-1 I don't mind if others are made known and would like to utilize it (or am utilizing it already).</p> <p>1-2 I would like to utilize it in a way that others are not made known (or am utilizing it already).</p> <p>1-3 I am willing to show information on my health care accumulated as a result of utilization to my children, so that it will be useful for health care of my children.</p> <p>1-4 I am willing to show information on my health care accumulated as a result of utilization to my relatives including siblings, uncles, aunts and cousins, so that it will be useful for their health care.</p> <p>1-5 Other reasons</p> <p>2 No</p> <p>Reasons of unwillingness (please describe)</p>
---

**Figure 2:** Awareness survey on succession of health care and health care information with ICT

## Findings

### Survey 1

An interview method was used for Survey 1; therefore responses were obtained from all 128 people as a result of the survey. The responses are indicated in Tab. 1. 91% go to regular hospitals, and approximately half of them have family doctors (48%). 53% communicated illnesses about himself/herself and ancestors to children and grandchildren, while most of them communicated verbally and only 2% put it in writing. 6% of all respondents were not willing to communicate it in the future verbally, and 64% of all respondents do not intend to put it in writing. It was clarified in this survey that verbal communication about illnesses of ancestors, etc. is thought to be sufficient and only 13% think it necessary to keep it in writing, when asked whether or not illnesses of a respondent and ancestors have been communicated to

descendants without advising that genetic and environmental factors relate to health. Although descendants are not able to confirm information if not kept in writing, it seems that respondents were answering questions without paying attention to it. It was also found that 62% of respondents are willing to communicate illness of ancestors and themselves verbally, including those who are willing to communicate it in the future.

	Rate of positive answers including "Yes," "Talked," "Concerned," etc. (%)	Rate of negative answers including "No," "Have not Talked," "Not concerned," etc. (%)	Plan to talk in the future / Plan to write (%)	Do not plan to talk in the future either / Do not plan to write (%)	Rate of no response (%)
1	91.4	7.8	--	--	0.8
2	47.7	39.1	--	--	13.3
3	53.1	24.2	--	--	22.7
3-1	53.1	25.0	--	--	21.9
3-1 Details	53.1	10.2	8.6	6.3	21.9
3-2	1.6	75.8	--	--	22.7
3-2 Details	1.6	0.8	10.9	64.1	22.7
4	57.0	23.4	--	--	19.6

**Table 1:** Results of awareness survey on succession of health care information

## Survey 2

As a result of the survey, the collection rate of Survey 2-1 was 57.9% (223 people) with 217 effective answers. The collection rate of Survey 2-2 was 57.6% (345 people) with 331 effective answers. Survey 2-3 used an interview method; therefore responses were received from all 44 people. The responses are indicated in Tab. 2. Parents and guardians raising children (average age: late 30s) were the subjects for Surveys 2-1 and 2-2, and were generally positive, i.e., 63-70% answered that they would like to utilize health care with ICT. In regards to the elderly people as the subjects for Survey 2-3, however, only 39% answered that they would like to utilize it, i.e., had negative ideas to utilization. When 1-1 to 1-5 (selection items for those who would like to utilize it) are reviewed, 25-27% of all effective responses represented willingness to communicate information on health care accumulated on their own to their children. Answers with willingness to communicate information on health care accumulated on their own to their children out of those who would like to utilize health care with ICT represented 36-40% from parents and guardians raising children and 71% from elderly people, i.e., resulting in a significant difference. Furthermore, 9-11% and 30% of effective responses from parents and guardians raising children and the elderly, respectively, responded that they would like to communicate information on health care accumulated on their own to relatives including siblings, cousins, uncles and aunts. 13-18% of parents and guardians raising children in both Surveys 2-1 and 2-2, and 77% of the elderly people in Survey 2-3 responded that they would like to utilize health care with ICT and communicate it to their relatives.

	Survey 2-1		Survey 2-2		Survey 2-3	
	Average age: 37		Average age: 38		Average age: 76	
	Response rate A* (%)	Response rate P** (%)	Response rate A* (%)	Response rate P** (%)	Response rate A* (%)	Response rate P** (%)
1	62.7	--	69.8	--	38.6	--
1-1	4.6	7.4	8.2	11.7	18.2	47.1
1-2	31.3	50.0	39.0	55.8	11.4	29.4
1-3	25.3	40.4	25.1	35.9	27.3	70.6
1-4	11.1	17.6	9.1	13.0	29.5	76.5
1-5	0.9	1.5	0.9	1.3	4.5	11.8
2	37.3	--	30.2	--	61.4	--

\* Response rate A: Number of responses / Number of effective responses

\*\* Response rate P: Number of responses / Number of people who selected 1

**Table 2:** Results of awareness survey on succession of health care and health care information

Tab. 3 is indicating response rates by focusing on the number of people who selected 1-3 or 1-4 in the results of Survey 2. It was found from this extraction that approximately 30% of effective responses in all surveys represent people who are willing to communicate information on their health care to their children and relatives. If limited to those who would like to utilize health care with ICT, the group of elderly people in Survey 2-3 had the highest rate in responses stating that they would like to communicate it to their children and relatives.

	Survey 2-1		Survey 2-2		Survey 2-3	
	Average age: 37		Average age: 38		Average age: 76	
	Response rate A* (%)	Response rate P** (%)	Response rate A* (%)	Response rate P** (%)	Response rate A* (%)	Response rate P** (%)
Number of people who selected 1-3 or 1-4	32.7	52.2	30.5	43.7	29.5	76.5

\* Response rate A: Number of responses / Number of effective responses

\*\* Response rate P: Number of responses / Number of people who selected 1

**Table 3:** Response rate with willingness to communicate information on health care to children or relatives

From the results of Survey 2, parents and guardians of children in their 30s are willing to utilize health care with ICT, compared with a group in their late 70s. Consciousness to communicate information on health care to children and relatives to be used for health care of children and relatives occupies only 30%

regardless of ages. Furthermore, in regards to the group of elderly people, 77% of those who would like to utilize health care with ICT wish to succeed information on their health care to children and relatives.

However, the number of targets is small in this survey, particularly in regards to the elderly, and similar surveys need to be continued in the future.

## **Discussions**

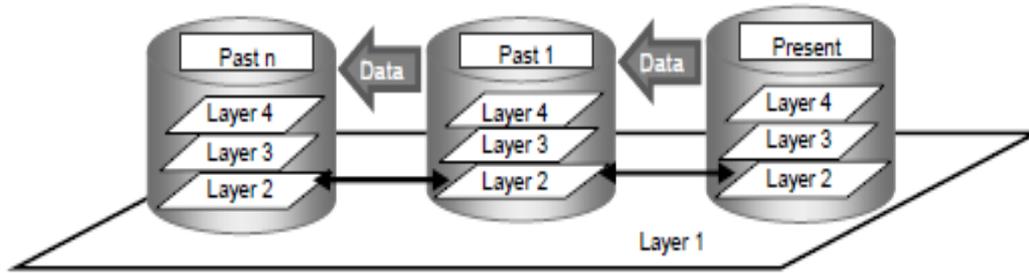
In Survey 1, 62% would like to communicate illness of their own and ancestors verbally, while 12.5% intended to leave it in writing. In Survey 2, on the other hand, approximately 30% would like to communicate information on their health care to descendants or relatives in all generations. The number of people who would like to communicate information on health care to descendants or relatives with ICT significantly exceeded the number of people who intend to keep it in writing, probably because they were indicated that “health is supposed to be determined by heredity, living environment and natural environment,” and asked if “they would like to communicate for the purpose of health care of descendants or relatives” not for their health care at the stage of the survey.

In Survey 2-3 targeting elderly people, 37.0% of respondents who answered with unwillingness of communication by utilizing ICT mentioned they are not good at machines, representing the greatest number. The second most common reason occupied 25.9% who answered with willingness to manage their health within the scope of their ability. Others included reasons such as “would like to communicate directly,” “troublesome,” “leave it to doctors,” etc. If the premise is not to use ICT on their own but someone helps to handle information with ICT, people who answer with willingness to manage their health care information and communicate it to their relatives might increase.

87.5% of people who wrote down or plan to write down in Survey 1 answered that they have concerns or a little concerns with illnesses of their ancestors. On the other hand, people who wrote down or plan to write down occupied 52.9% among those who have concerns with illnesses of ancestors, while people who wrote down or plan to write down occupied only 8.9% among those who have a little concerns with illnesses of ancestors. It might be suggesting the strong will of communication and awareness on the illnesses of ancestors, since a method to keep it in writing is not only for oneself but also helps to leave something that can be confirmed in later generations.

We previously proposed a structure to succeed information as knowledge (Kurata, Ohashi, and Hori, 2011) as well as a platform to collect and succeed information for restoration from earthquakes as indicated in Fig. 3 and Tab. 4 (Kurata & Ohashi, 2011). In addition, we will propose this platform based on a new significance as a platform(LIP) to succeed local culture including individual’s health care information, not limited to the time of disasters(Kurata,N., Kurata,Y., and Ohashi, 2012). When individual’s health care information is positioned in the LIP, it is considered to belong to Layers 4-2 in Fig. 3 and Tab. 4, since it is information that transitions relatively quickly. With multilayered archiving of local information including individual’s health with ICT, health care information at a certain point becomes interrelated and can be

learned along with related people, episodes and geographical information. Retention of health care information with ICT can condense personal information and at the same time store the surrounding information including relevance; therefore will be the best learning tool for children/relatives. Archiving health care information like this means preservation of physical and human information in the region; therefore will lead to expression of local identity itself.



**Figure 3:** The platform for the accumulation of archives and information

Time Scale	Layer	Archives/Memories/Information	Details	
Micro Scale 1-5year	Layer 4	Inhabitants, Individuals	Layer 4-2	Life log (both open and closed contents)
			Layer 4-1	Social graph
	Layer 3	Communities	Layer 3-2	Combination of public/open part of social graph and life log
			Layer 3-1	Local event & local history
Meso Scale 10-30year	Layer 2	Government etc. Public Institutions Fundamental and Variable Information	Layer 2	Three dimensional maps, including the buildings etc.
Macro Scale 100year	Layer 1	Government etc. Public Institutions Fundamental and Long-lasting Information	Layer 1-4	Long-lasting three dimensional maps, including the land elevation maps etc.
			Layer 1-3	Long-lasting two dimensional maps, including the road maps etc.
			Layer 1-2	Shallow under-ground maps, including the water pipe maps etc.
			Layer 1-1	Deep under-ground maps, including the stratum maps etc.

**Table 4:** Details of the simplified and conformed layers given in Fig. 3

## Conclusions

It was clarified in this study how many people would like to succeed health care information to relatives as well as how many people would like to succeed it by utilizing ICT, by focusing on health care information. The elderly is strongly willing to communicate, while many of them are not good at utilizing ICT, leaving difficulties in this respect. However, as we previous proposed (Kurata, Ohashi, and Hori,

2011), assignment of support staff from a local government, etc. is considered as one of the solutions to manage health care information for the elderly. It is because local governments are benefited by extended healthy life expectancy which will lead to reduction of medical expenses. Promotion of individual's health care with ICT will help succeed the information to relatives in remote places; therefore the information can be succeeded to not only relatives within a visible scope but also to descendants in future generations. However, personal information should not be leaked and security has to be strengthened. Health care information cannot be used for social discrimination either. There is also an issue of how to be consistent with the privacy rights of an individual. Regardless of these difficulties, as far as genetic and environmental factors significantly determine health, it might be a better idea to suppose that health care information is to be succeeded to relatives as their right to know unless it is specifically designated for nondisclosure, although it might be contrary to previous ideas.

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# Patterns of Collaboration in a Pre-Service Teacher Learn-Technology-by-Design Project

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**Description:** This paper presents an overview of the patterns of collaboration in long-term assessment groups. The purpose of the study was to try to develop an understanding of how groups of pre-service teachers organised, planned and built a web-based resource using a learn-technology-by-design framework. The paper presents the observational data, which was collected as part on an ongoing research project on curriculum redesign in an Information and Communication Technology (ICT) in Education unit of study (course).

# Patterns of Collaboration in a Pre-Service Teacher Learn-Technology-by-Design Project

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## Abstract

This paper presents an overview of the patterns of collaboration in long-term assessment groups. The purpose of the study was to try to develop an understanding of how groups of pre-service teachers organised, planned and built a web-based resource using a learn-technology-by-design framework. A design-based research approach was used. This paper presents the observational data, which was collected as part of an ongoing research project on curriculum redesign in an Information and Communication Technology (ICT) in Education unit of study (course). In this study, seven groups were observed while they engaged in a long-term collaboration and completed two group assessment tasks. The results suggest that students needed both guidance and time to develop their skills in collaboration. While there were variations in the collaborative patterns, these variations did not impact upon the success of the groups in the development of their ICT resources.

**Key Words:** Collaborative learning, pre-service teacher education, ICT education, learn-technology-by-design, authentic learning

## Introduction

The benefits for students in using a learn-by-design approach have been well-researched and the research has covered a broad range of research streams. For example, one stream of studies have focused on the benefits of student learning through design across the education sector, as Kafai (2006) states that “The greatest learning benefit remains reserved for those engaged in the design process... and not those at the receiving end” (p.39). Another stream of research has investigated how to structure the design experience to support learning and has focused more on the design of learning tasks and activities (Ronen-Fuhrmann & Kali, 2010). While another stream of studies have focused on teachers as designers (Goodyear, Markauskaite, & Kali, 2009). One issue raised by Goodyear et al. (2009) on the research on teachers as designers is that it may be “all too rare for university teachers to have timely, valid and reliable data on student achievement. This is a major problem in the assessment process itself, but also handicaps any attempts at evidence-driven iterative design (p.15).

In this paper, we present the patterns of collaboration in a learn-technology-by-design project. The rationale for this approach is that, as educators, by understanding how students

collaborate and engage in design processes we can provide enhanced support and just in time feedback to support the acquisition of design knowledge. This work is part of a larger interest we have in design-based research, teaching-as-design, collaborative learning by design and design principles (see, for example (Galstaun, Kennedy-Clark, & Hu, 2011; Hu & Fyfe, 2010; Hu, Wong, Fyfe, & Chan, 2010; Kennedy-Clark, 2011; Kennedy-Clark, Galstaun, & Anderson, 2013; Kennedy-Clark & Thompson, 2012)). The study reported on here is part of an ongoing curriculum redesign project of the standalone Information and Communication Technology (ICT) in Education Unit of Study (course) at the University of Sydney. We have come to attach particular importance both to the design-based research approach which allows the research team to consider the multiple levels of design from the micro-detail of the lesson activities to the broader context of the classroom and education environment and to the role of collaboration in the design process.

## **Background**

### **Pre-Service Teachers and ICTs**

The complexity of preparing pre-service teachers for technology use in the classroom is an enduring issue. As technology rapidly evolves, it is difficult to design a unit of study that provides lasting and relevant knowledge and skills for pre-service teachers. So, in this sense rather than teaching a course that would provide students with skills in programs like MSWord, we have tried to use a more generic skills-based approach that teaches students about the process of evaluating existing resources, and designing and creating purpose-built resources so that they can develop skills that can be applied across a range of technologies. This approach draws upon Goodyear et al.'s (2009) claim of a place for pedagogical p-prims. According to Goodyear et al. (2009) pedagogical p-prims encode direct experiences of learning and teaching – they are useful for sense-making. In this respect, the pedagogical p-prims that arise from a learn-by-design experience may form the building blocks for what they call 'folk pedagogy'. In diSessa's (2004) explanation of knowledge in pieces, different sets of p-prims are activated in different contexts, so the specific context in which a piece of knowledge is experience may not be activated in a different context. For example, a pre-service teacher may learn how to use a particular software, but they may not be able to apply that knowledge in a different context. This description of context dependent p-prims may explain the apparent contradictions in teachers' and students' pedagogical views.

Building on the need to experience the design process in context, Mishra and Koehler (2006) advocate an approach of learn-technology-by-design for preparing pre-service teachers for technology integration in the classroom, using this approach pre-service teachers 'propose software and hardware solutions to their specific contexts and problems' (p. 1034). So rather than teaching technical skills or mastery of a program or application, the tutorials were used to support pre-service teachers in developing both technical and pedagogical knowledge in the context of their teaching discipline. As Mishra and Koehler (2006) advocate an approach wherein pre-service teachers have 'spontaneous and short tutorial sessions - both student to student and instructor to student driven by the immediate requirements of the groups' (p. 1034), each tutorial commenced with a short teacher led session where students could raise questions about the design process. In this respect, the learn-technology-by-design approach presents educators with an opportunity for the symbiotic development of technical and pedagogical skills. Similarly, as part of the redesign process, the research team has shifted away from our earlier studies that used more complicated technologies, such as virtual worlds and animation software, which required considerable skills training in comparison to open-source and government endorsed software. Our rationale for this was two-fold. Firstly, when

the students enter the classroom as novice teachers they will have access to interactive whiteboards and government supported software (SMART Notebook) and they will have access to a range of web-supported open-source tools that are able to be used behind the schools' firewalls.

### **Collaboration**

The scaffolding of collaborative tasks (problems) needs to be considered in the context of how people collaborate. Many researchers see, for example, Beatty and Nunan (2004) and Gillies (2003) have shown that simply putting people together will not result in an effective collaboration. The studies indicate that the collaboration needs to be scaffolded. Through scaffolding the collaboration students can develop strategies to share the workload and focus on specific areas of the task. For example, if sharing a computer, if one student is directing the group by referring to the notes, their partner can focus on implementing the navigational goals and completing the specified action. This is in support of research that indicates that calls for explicit organisation of the materials and students need to be aware of both the collaborative and task-based processes (Kim & Hannafin, 2011; Thompson, Kennedy-Clark, Markauskaite, & Southavilay, 2011).

Collaborative learning requires set of actions and processes. For example, this may include practical actions, such as a plan for the work process, skills, such as critical thinking, and a learning activity, such as a scaffolded task. Learners need to engage in these steps to effectively collaborate. Determining group priorities, therefore, is also an important part of the collaborative learning process (Jeong & Chi, 2007; Johnson & Johnson, 2002; Slavin, 1996; Stahl, 2013). Consequently, when designing an open-ended collaborative task, teachers need to commence with manageable activities that scaffold both the collaboration and the problem. In this respect, the pre-service teachers need to know how to effectively collaborate and need explicit guidance in the steps of how to plan and implement the collaborative goals in order to complete the task. When designing the unit of study, we developed a collaborative task early in the course for students to develop an interactive whiteboard resource before the development of their website. This assessment task gave the students the opportunity to develop their collaborative skills before the major assessment task, which was more complicated.

### **Web 2.0 Tools**

As new digital media technologies are developed and enveloped by mainstream society, it is necessary to reflect upon how these technologies are being used as educational tools in pre-service teacher training as there is an expectation that graduating teachers will have both the skill and understanding to be able to use a range of ICTs to support learning. If Web 1.0 (e-mail, one way video conferencing and discussion forums) was all about receiving information and users being passive consumers, then Web 2.0 is all about being part of the action with the user being the creator and distributor of information (Ajjan & Hartshorne, 2008; Usluel & Mazman, 2009). It is this user as creator element of these technologies that has afforded higher education institutions with new frontiers to engage with staff and students to provide an enhanced learning experience.

In earlier iterations of the unit of study discussed in this paper, a range of technologies have been used. This has included animation software, such as Marvin, a 3D animation package that allows users to create their own animations, and a collaborative Educational Video Annotation software (EVA) that was developed at the Faculty of Education and Social Work at the University of Sydney (Hu, et al., 2010). What we have found was that the more

complicated the technology, the more resistant the students were to use these new technologies and new skills in an educational setting. For example, in a study on the use of virtual worlds in science education we found that given the amount of time that it would take to master the virtual world that pre-service teachers did not want to risk using the technology in their own teaching (Kennedy-Clark, 2011). However, they would feel comfortable using an online point and click game that required no skills training (Kennedy-Clark, Galstaun, & Anderson, 2011). On the basis of these findings and studies, such as Choy et al's (2008), we adopted the use of web-supported tools so that the pre-service teachers would have sufficient exposure to the website platform (Google Sites and WordPress) to feel comfortable using this technology in the classroom.

## **Methodology and Process**

A design-based research approach underpins the study where each semester the unit is modified on the basis of feedback and analysis of the previous studies in a system of continual renewal and improvement that considers not only the changing student needs, but also the evolution of technologies. Design-based research is an approach to research that supports the exploration of educational problems and refining theory and practice by defining a pedagogical outcome and then focusing on how to create a learning environment that supports the outcome (Reeves, Herrington, & Oliver, 2005; Wang & Hannafin, 2005). We used a collaborative approach in both the design of the tasks and the critical feedback through a peer review process. Design-based learning activities have been shown to be of benefit to students learning how to use technology effectively in a range of educational contexts (Kali, Goodyear, & Markauskaite, 2011; Kali & Ronen-Fuhrmann, 2011; Mishra & Koehler, 2006). Research findings have indicated that pre-service teachers develop deeper understanding through the experiences of both dialogue and reflection in action (Mishra & Koehler, 2006). Learn-technology-by-design tasks are accomplished in the environments where students, and in this instance pre-service teachers, are encouraged to use ICT tools to build a learning environment.

## **Data Collection and Analysis**

The study was conducted in Semester 2, 2012 between July and November. There were fifteen participants in the study including five males. All of the students were completing an undergraduate degree in secondary education. This was a compulsory, fourth year course. The two collaborative assessment tasks were observed over a period of five weeks from week 2 through to week 6. Week 1 was not observed as this was an introductory session providing students with an overview of the underpinning theories in design and collaboration as well as information about the assessment tasks and timetable for each component around the design and development process. The tutorial sessions were two hours in length. The tutorial sessions occurred on a weekly basis. There was no lecture for this subject. The task in the first two sessions (weeks 2 and 3) was to build an interactive whiteboard resource. Week 4 was an assessment and in the remaining three sessions (weeks 5, 6 and 7), the task was to design and build a website on a particular curriculum area. The low weighted task in week 4 gave each of the groups the opportunity to develop their collaborative work strategies as well as the opportunity to work together on their curriculum areas. In these early weeks there was a degree of fluidity in the groups with groups moving seating. After the first assessment, the groups had established permanent seating arrangements (i.e. each student sat in the same seat each tutorial).

Note that Group 2 ceased to function after the first assessment in week 4. These students joined other groups. The group split to find a better collaboration using their other curriculum subject major. Though they were both languages teachers (one Japanese and one Spanish) the collaboration on the first task was quite difficult for each student finding common subject content areas as each language had unique features for learning and building a generic IWB resource that dealt with each language provided some challenges for the group. Using their other subject majors (English and History) allowed for better subject content negotiation for the newly formed groups to collaborate with each other. This allowed the group to better engage with the task.

In this paper, the observational data is being reported upon. Persistent observation was one form of data collected during the semester-long study. Persistent observation is the ongoing observation of participants in a study. Persistent observation allows the researcher to identify what is relevant to the study and what is not (Lincoln & Guba 1985). Through persistent observation, a researcher can also see how students and teachers function, which groups were motivated, which groups struggled, and how the teachers interacted with the students. The observational data was collected over the course of the semester by the second author. During this time, the second author attended all of the classes and observed the class while they were designing and developing the resources. While observations were taken throughout the tutorials, at four stages during each tutorial (start, 30 mins, 60 mins, 90mins), observations were taken that focused specifically on the group processes. These timed observation periods lasted for approximately five minutes. The second author took notes, made videos and took photos of each of the sessions in order to develop a detailed narrative of each group's interactions during the tutorials. The first author, who was the teacher, did not engage with the data collection activity during class time in order to avoid perceived coercion to participate in class or the Hawthorne Effect. The Hawthorne Effect was described by Mayo (1949) as a form of reactivity whereby students modify their behaviour or outputs purely in response to the fact that they know they are being studied. The observations were conducted over the course of the semester in order to ensure that sufficient data through a prolonged engagement with the group was collected. According to Lincoln and Guba (1985), prolonged engagement is crucial in a qualitative study in helping to support the concept of credibility in qualitative research because it assists the researcher in testing for misinformation and building trust with the participants.

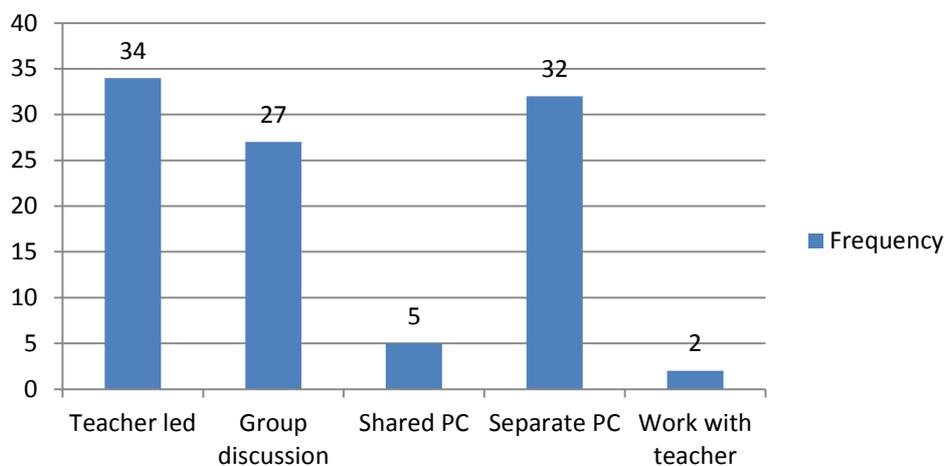
In order to validate the observations peer de-briefing was used at the conclusion of each of the sessions and at the conclusion of the semester. Peer debriefing is a process in which the investigator discusses the investigation with peers. Through peer de-briefing a research team can explore aspects of the research that may otherwise remain only implicit (Lincoln & Guba, 1985). Peer debriefing can encourage researchers to search for biases, scrutinise their hypotheses and justification for their research, discuss the direction of their research and methodological design, and to explore their feelings and emotions towards their research so that they can assess how their experience might impact upon their interpretation of the data (Lincoln & Guba, 1985).

The analysis of the observational data was undertaken in several stages. Firstly, the individual group collaborations were identified for each tutorial. In this sense, the group patterns of collaboration were isolated from the whole class narrative. After the initial analysis of data, the individual segments of collaboration were coded. Originally, the codes were teacher talk, small group discussion, individual work (side-by-side on separate computers), shared work (group working on one computer), work with teacher and assessment. The coded interactions

were developed into a visualisation. After analysing the visualisations the research team re-coded the data to remove the ‘assessment’ code as it resulted in a skewed pattern of collaboration that did not reflect the actual class interactions. Next, the coded data were developed into a series of visualisations, the research team then discussed which visualisation provided the best representation of the collaborations. Each of the actions was allocated a symbol to develop the pattern, whilst this may seem fairly simplistic, it does provide a visual representation of the groups (Figure 2). The results of the observations were compiled and analysed for patterns of collaboration and are presented in the results.

## Results and Discussion

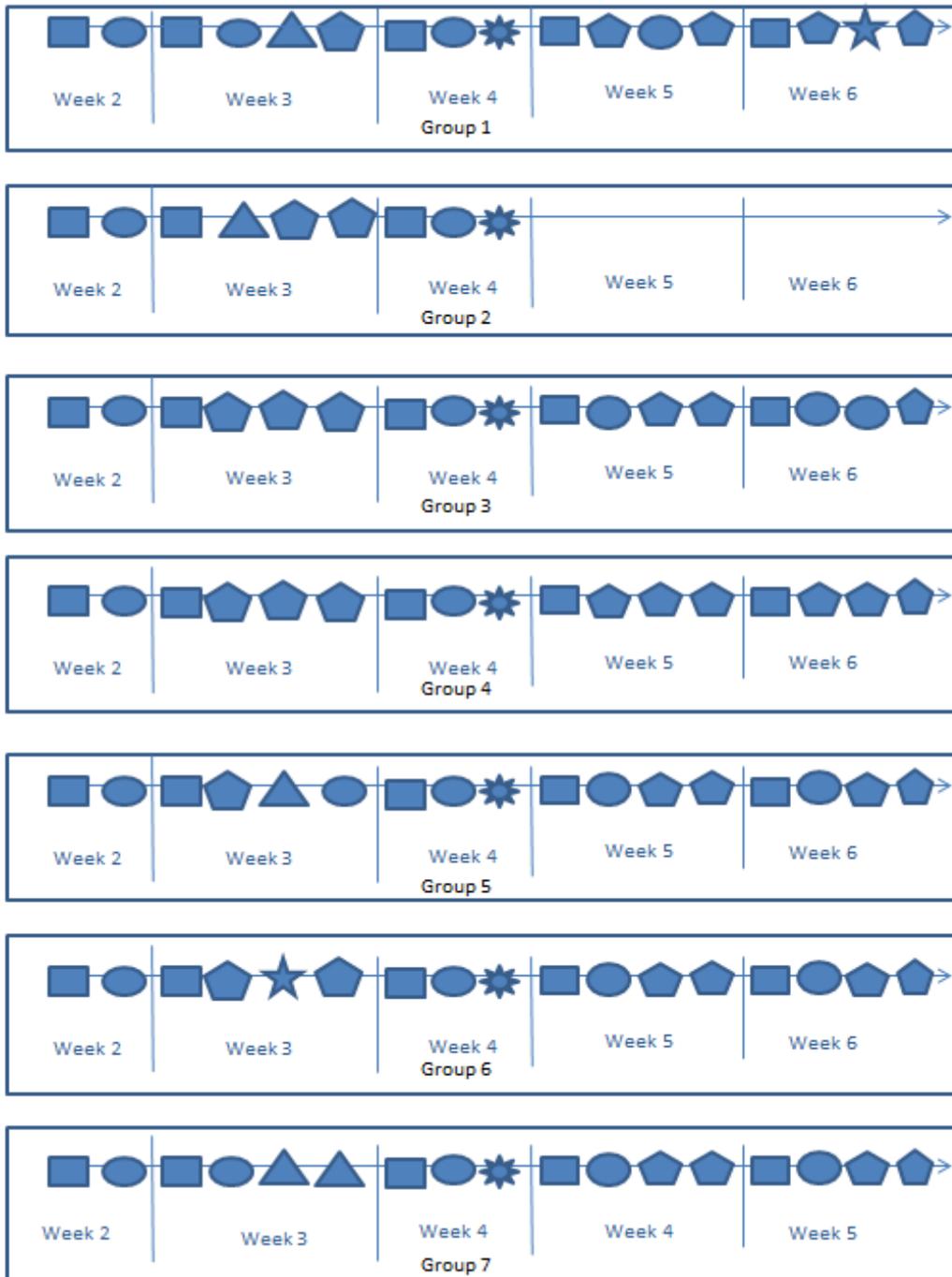
A frequency graph was developed to see if there were any trends in collaborative behaviour. As can be seen in Figure 1, of the 97 recorded activities 34 per cent were the teacher led activities. These occurred at the start of each class.



**Figure 1: Frequency distribution of class activities**

The next most frequent activity was working on a separate computer (32%) followed by group discussion (27%). The most infrequent activity was to work with the teacher (2%). What this meant was that for the timed observation the group worked with the teacher and the teacher was actually sitting with the students. This was a positive result for the researchers as it meant that the groups were able to work effectively without sustained support from the teacher. In this respect, the actual level of skill required to master the two tools (interactive whiteboard and web resource) was within the range of the class members. This indicates that in comparison to our earlier studies, the students were not struggling with the technology.

What the frequency data does suggest is that both group discussion and individual work were the main task-related activities. Sharing a computer was not a frequent activity, with only five per cent of all of the recorded observations coded for sharing. It was also observed that as the groups progressed through the collaboration, sharing became less frequent. In fact, after the first assessment (developing an interactive whiteboard resource) none of the groups shared a computer. So whilst they sat next to each other, the group members were developing aspects of the shared design. That is, while the groups had shared goals, they all had individual roles and tasks to complete.



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**Legend**

Symbol	Description
	Teacher talk (teacher at front of room, guiding class)
	Group Discussion
	Shared PC (side-by-side, share mouse)
	Separate PCs
	Work with teacher (Teacher sat with students)
	Assessment (included but not measured)

**Figure 2: Student patterns of collaboration**

While the frequency analysis may show the broad trends of the class collaboration, it does not show the actual patterns of collaboration for each group. Accordingly, the research team developed a process map for each of the seven groups. These maps present the patterns of group design processes (Figure 2). At the start of each week, the teacher led the class in discussion and through the content for the course; hence, the high frequency of teacher led activities. Note that the teacher walked around and talked to each group in each session; however, in the cases where the teacher remained with a group for a considerable period of time and not just for trouble shooting, this is recorded on the maps. Another consideration is that for weeks 2 and 4 fewer observations were included in maps due to the actual class activities. In week 2, the teacher talked for most of the class and in week 4 half the final two observations were coded as assessment. In terms of whole class behaviour, the patterns of collaboration weeks 2 and 4 demonstrate how all of the groups had the same pattern of behaviour. In week 2, the teacher led the activity and then the groups discussed (planned) their shared interactive whiteboard resources. In week 4, the teacher started the class and then each group had the opportunity to prepare for the interactive whiteboard assessment. All of the groups used this time for a small group discussion.

In regards to the development of a regular pattern of activity, some groups, such as groups 4, 7, and 5 established fairly routine patterns of behaviour as the collaboration progresses. For example, Group 4 started each week with the teacher led activity and then spent the rest of the tutorial working on separate computers. When asked about this behaviour, the two female students indicated that they met during the week to plan their tasks for the tutorial so that they could use the tutorial time specifically to build the resources. Other groups did not establish routine patterns on behaviour, for example, Group 3 changed their patterns of collaboration each week. In regards to the establishment of routines, it is not a necessary factor in achieving a group consensus or enacting a shared goal. Poole and Holmes (1995) found that the orderliness of groups had no clear relationship to consensus to change in group decision making. They established that while a general ordering of activities (good planning) may prove useful, a tight micromanagement of the discussion was not necessarily advantageous. This would appear to be supported in these results, and it may just be that students need support in arriving at the pattern of collaboration that suits their particular group and their shared goals. This will require that students know how to identify a goal, negotiate a goal pathway, agree on tasks and evaluate the process in order to modify or continue with the current strategies in subsequent iterations of the activity.

What the results suggest is that the teacher led activity at the start of each class was used to orient the groups. Some groups followed the teacher activity with a discussion. For instance, each week, Group 7 had a discussion after the teacher activity. We argue that the issue is not whether to scaffold the collaboration and the task, but when and how to scaffold (Azevedo & Jacobson, 2008). That is, a degree of scaffolding or guidance is needed to both aspects (collaboration and task), but allowing students to engage with a task without presenting a guided step-by-step task may encourage the activation of non-domain-specific knowledge and recognition of gaps in knowledge. This deeper understanding of the task increases the domain knowledge and problem-solving skills. Enabling students to struggle or make mistakes is often shied away from in education, but as Kolodner (2006) suggested, timely feedback and opportunities to re-engage with the task can afford learners with greater opportunities to learn and interpret their experiences.

What we are arguing is that if the groups only engage with highly scaffolded (guided) tasks, it is unlikely that they will delve deeper to gain a more comprehensive understanding of the task, the tool and the content. That is, if the collaborative task is too guided, the students may not develop the technological, pedagogical and content knowledge needed to be able to evaluate, develop and plan to use ICTs in their own teaching practice across a range of contexts. As Bransford and Schwartz (1999, pp. 82 - 83) suggest, there is value in allowing learners to be able to 'bump up against the world' and to revise and re-think their initial actions if their first encounter is not successful and they indicate that this testing of thinking can lead to better learning. The value having two assessments as part of the long term collaboration is that the students had time to develop and reflect upon their collaborative approach before they engaged with the more complex second assessment of planning, designing and building a web resource.

It was evident from our earlier studies that the pre-service teachers and classroom teachers found the use of complicated technologies, such as virtual worlds, to be daunting due to factors, such as the technical requirements and the amount of time it would take them to master the technology (Galstaun, et al., 2011; Kennedy-Clark, 2011). Hence, by providing students with an opportunity to use an open-source Web 2.0 tool they were able to develop both the skills and confidence of using the technology in their particular content area. The need for pre-service teachers to gain successful experience in using technology for learning and teaching is supported by Teo (2008), who reasons that there is:

a need for teacher educators to provide a conducive and non-threatening environment for pre-service teachers to experience success in using the computers, with a view to allowing pre-service teachers to gain competence and confidence in using computers for teaching and learning (p. 421).

Overall, what we were trying to achieve in this phase of the research was a move away from teaching the tool to teaching with the tool to using ICT meaningfully (Figg & McCartney, 2010). What we found was that the actual design of the unit of study and the selection of easy to use tools meant that students were able to successfully design and build their ICT resources.

## **Conclusions**

The unit of study described in this paper tried to prepare pre-service teachers to be fluent in both pedagogy and basic design theory so that they may use their newly acquired ICT skills to produce educationally sound web-based learning resources (Hu, Wong, Fyfe, & Chan, 2010). Through an analysis of the patterns of collaboration we were able to identify the most frequent activities of the collaboration, which happened best when students were working on separate computers. What can be surmised here was the success of the groups in completing both of the assessment tasks successfully due to the scaffolding and just-in-time support provided by the teacher. The lower weighted assessment task in week 4 gave the groups time to develop strategies that would enable a successful collaboration. That is not to say that all of the groups were successful, Group 2 separated after the first task and the members joined different groups. However, having time and appropriate guidance enabled the groups to develop both the collaborative skills and ICT skills to develop interactive content-based syllabus driven web-resources.

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HAWAII INTERNATIONAL CONFERENCE – JANUARY 5-8, 2014

TITLE PAGE

- a) **Title:** The Festival of the *Mejorana* in Panama; the Spirit of Competition as Connected with National Pride
- b) **Topic Area:** Arts Education and/or Higher Education
- c) **Presentation Format:** This presentation falls under the conference category of “Abstracts” and most appropriately would be included with “Paper Sessions.”
- d) **Description.** See below –
- e) **Author:** Elizabeth Rhodes – Affiliation and contact information, see below.

**75-Word Description:** In the Republic of Panama, the Festival of the *Mejorana* is an event that takes place each year allowing for musicians and dancers from across the country to gather and celebrate as well as compete. The idea of competition provides a platform to discuss commonalities among the performers as well as their differences. This presentation will highlight the national pride of Panamanian folkloric performers as associated with a specific, annual festival venue.

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## ABSTRACT

This paper presentation is grounded in on-going research on folkloric dance in the Republic of Panama. My original field work occurred in 1996-97 while in residence as a Fulbright Scholar in the Department of Dance at the University of Panama. During that time period, I witnessed folkloric performances in venues including the National Theatre, schools, and on village streets during festivals, documenting the dancing through video, still photography, and hand-written notes. I participated in rehearsals and performances with the National folkloric company and conducted qualitative, intensive interviews whenever possible. Within each celebration, I observed cohesiveness of the participating groups as well as individual pride in ones wardrobe and performance which ultimately supported a sense of competition. Examples include the devils during the Congo Ritual who seek to control their neighborhood street and out-dance rivals, companies formed to represent different departments on the University campus, and annual festivals where formal competitions are organized and prizes are awarded during the culmination of the event. One of the best-known and largest occurrences of the last example mentioned above is the Festival of the *Mejorana* which takes place in September in the town of Guararé. Folk groups from the diverse provinces of Panama travel to perform and vie for awards in organized events that include competitions for the best musician of the *mejorana*, a stringed instrument with Spanish legacy, as well as the best folkloric dance troupe. The competition for the *reina* or queen would have already taken place, and the handing down of the crown is another aspect of the festival which derives from competition and selection. The festival was established over 40 years by folklorists Manuel and Dora Zárate, and it continues to bring together communities from across Panama as well as observers from other destinations and nationalities. In addition to providing an overview of the Festival of the *Mejorana*, I will describe specific folkloric dances that would have been performed during the early years of this celebration as well as more contemporary times. By using the concept of competition, I will be able to discuss commonalities among the groups performing while also offering observations dealing with diversity of theme, choreographic design, and movement style as part of each group's meaningful representation of their region or province which collectively contributes to an overall national pride.

### Research Objectives:

- To provide an overview of the Festival of the *Mejorana* in Panama
- To discuss one to two specific dances presented for competition as part of the festival
- To identify connectivity between the competitive aspect of folkloric dance and national pride, as based on the specific venue of the Festival of the *Mejorana*

**Proposed Methodology:** The project is primarily qualitative. A literature search has been conducted, and a review of personal archives from past field work will take place. At present, travel arrangements for collection of new data have been made, and continuation of primary source field work in Panama is projected for September of 2013.

**Expected Outcomes:** See abstract.

## **Extended Abstract: A Review of Cyber Bullying Policies in Saskatchewan Schools**

### **Background**

There has been extensive media coverage on cyber bullying in the past year following the suicides of two young Canadian cyber bullying victims. In addition, there has been a national call by researchers to develop Canadian cyber bullying policy guidelines and professional development programs for educators. However, at this time with the exception of student theses, there is a complete lack of research (i.e., published, peer-reviewed) on cyber bullying in Saskatchewan, Canada.

### **Review of the Literature**

Although today's adolescents survive socially via technology use, not all technological interactions are positive (Cassidy, Brown, & Jackson, 2012). Across Canada, statistics suggest approximately 30% of students between the ages of 12 and 17 have either cyber bullied others or have been victims of cyber bullying themselves (Beran & Li, 2005; Wade & Beran, 2011). Cyber bullying can be defined as a method of willful and repeated harassment through electronic communication tools (Beran & Li, 2005; Li, 2006; 2007; Pisch & Hellsten, 2012). Unlike traditional bullying, cyber bullying takes advantage of the anonymity provided by technology (Beran & Li, 2005, Li, 2006; 2007; Pisch & Hellsten, 2012). Although some individuals continue to perceive cyber bullying as insignificant (Andrie, 2013; Hinduja & Patchin, 2009; Pisch & Hellsten, 2012), it can be psychologically devastating for victims and can lead to mental health issues such as depression and school absenteeism (Shariff, 2008).

The prevalence of cyber bullying is enhanced by the proliferation of electronic media, including the use of cellular-smart phones, computers, electronic tablets, and internet gaming systems. These devices can text, email, instant message, and individually and collectively link users to offensive websites, chat rooms, webcams, blogs, twitter, message boards, and social networking websites such as Facebook and My Space (Andrie, 2013; Pisch & Hellsten, 2012; Shariff & Johnny, 2007; Wade & Beran, 2011). Electronic media provides youth with the opportunity to "torment, threaten, stalk, humiliate, embarrass, exclude, intimidate, or otherwise target others" (Broster & Brien, 2010, p. 416). Cyber bullying experiences include derogatory messages, comments, or emails about appearances or personhood, voting/rating websites, threats, false rumors, sexual messages and/or pictures, sexting, photo modifications, stolen passwords resulting in masquerading, and exclusion (Broster & Brien, 2010; Hemphill et al., 2012). Most cyber bullying is "covert, insidious and anonymous because perpetrators are shielded by screen names" (Shariff & Johnny, 2007, p. 312) and the perceived anonymity can lead to disinhibition and escalated levels of cyber bullying (Broster & Brien, 2010).

The majority of cyber bully victims fail to report the abuse to authority figures such as parents or teachers (Andrie, 2013; Cochrane, 2008; Pisch & Hellsten, 2012; Shariff, 2008). In some cases, youth believe adults cannot stop the victimization and that prevention and management of cyber bullying is ineffective (Andrie, 2013; Pisch & Hellsten, 2012). Youth may not report cyber bullying because of fear of being further victimized (Cassidy, Brown, & Jackson, 2012) or because some of the methods of managing and preventing cyber bullying impose more limitations on the victim (e.g., restricting access to technology) than they do the perpetrator (Couture & Hall, 2010).

### **Context of Cyber bullying in Saskatchewan**

While the Saskatchewan government has directed school divisions to devise anti-bullying policies to protect their students, and has urged school divisions to include cyber bullying within these polices, "it is not uncommon for schools to overlook cyber bullying as an important element of their policies and regulations" (Shariff & Johnny, 2007, p. 316). Thus, as of 2008, few Saskatchewan school divisions had specific cyber bullying policies (Coates, 2011). The lack of official direction has resulted in a policy gap for Saskatchewan schools (Shariff & Hoff, 2007). In order to provide a safe educational environment for Saskatchewan students, schools need Saskatchewan "guidelines that provide reasonable boundaries and direction as to their responsibility" (Shariff & Hoff, 2007, p. 91) with respect to cyber bullying.

### **Purpose of the Study**

The overall objective of this study is to develop foundational policy knowledge and guidelines for school divisions regarding cyber bullying in Saskatchewan, Canada. This research study developed in response to recent media attention in Canada concerning cyber bullying, a growing collection of data pertaining to the prevalence of cyber bullying in Saskatchewan schools, aging and/or obsolete information sources speaking to policy guidelines governing bullying (Coates, 2011), and recommendations to develop policy guidelines and professional development programs for educators focused on cyber bullying (Cochrane, 2008) in a Saskatchewan context. Thus, this research project will: (1) review existing anti-bullying policies in Saskatchewan school divisions for evidence of cyber bullying inclusion; and (2) conduct an environmental scan of anti-bullying education programs currently utilized by Saskatchewan schools. Results will be integrated and summarized and recommendations will be made regarding divisional policy, programming, and management of cyber bullying.

## **Theoretical Framework**

The study of cyber bullying in the Canadian context has primarily been conducted atheoretically (e.g., Beran & Li, 2005; Li, 2006; 2007). There are conflicting views regarding the origin of cyber bullying and whether cyber bullying should be considered an extension of traditional bullying (Kowalski & Fedina, 2011) or a unique form of aggression (Sheriff, 2008). Concomitant with this discord is the fact that historically traditional bullying was not viewed as problematic and was not itself systematically studied until the 1970's (Shariff, 2008). This makes the study of bullying relatively young and the study of cyber bullying (which has only been evident since the mid 2000's) in its relative infancy. Theory regarding a construct tends to develop as studies of the construct increase in number. One recent study (Hemphill et al., 2012) utilized the Social Development Model (SDM; Catalano & Hawkins, 1996) to examine predictors of cyber bullying in secondary school students. Findings suggest that the SDM may be a promising theoretical framework to use in the study of cyber bullying in Saskatchewan schools. The SDM organizes risk factors into their zone of influence in different socialization settings (e.g., student, family, peers, school, community) across development (or age), recognizing that there are different contextual influences at different developmental periods (Catalano & Hawkins, 1996). The SDM also suggests that anti-social behaviours such as cyber bullying originate with unhealthy beliefs (attitudes) and unclear standards (as would be evident in many Saskatchewan schools due to the policy gap), as well as attachment to peers who are also involved in anti-social behaviour (Catalano & Hawkins, 1996).

## **Methodology**

This study is currently underway and involves two separate but related phases.

**Phase 1 - Critical Review of Saskatchewan School Division Anti-Bullying Policies:** After obtaining the most recent anti-bullying policies from each Saskatchewan school division (we are currently engaging in this process), using multiple coders (Hsieh & Shannon, 2005) for triangulation (Tasakkori & Tedlie, 2003), we will systematically review each policy using qualitative content analysis in the summative tradition (Hsieh & Shannon, 2005) and qualitative document analysis (Bowen, 2009). These methods are appropriate and useful to use with policy analysis and reform (Hsieh & Shannon, 2005). Using summative content analysis will allow us to identify and quantify words or content in the policy texts pertaining to cyber bullying with the purpose of understanding the contextual use of the words (Hsieh & Shannon, 2005). Data will be recorded in a spreadsheet and findings will be presented using descriptive statistics. Qualitative document analysis utilizes thematic analysis (Braun & Clarke, 2006) which will allow us to code the policies according to thematic categories and relationships. Results will be presented in textual format with extracts and citations from the policy documents and a conceptual map.

## **PHASE 2 - Environmental Scan of Anti-bullying Education Programs Currently Utilized by SK**

**Schools:** We will determine which anti-bullying programs are utilized by each school division and, if needed, each school. We will then obtain information (i.e., documents, videos, lesson plans, etc.) about each of the programs utilized. We will employ both content analysis in the summative tradition (Hsieh & Shannon, 2005) and qualitative document analysis (Bowen, 2009) to assess each program for key characteristics related to cyber bullying following the process described in phase 1.

**Integration** - We will then integrate, triangulate (Patton, 1990) and summarize the results from the two phases. Results will be examined for consistent, complementarity, and discrepant findings (Lee & Smith, 2012). Results will provide a solid foundation for a Saskatchewan (Canada) cyber bullying policy.

### **Significance of Study**

Cyber bullying has received extensive media coverage in the past year following the suicides of two Canadian cyber bullying victims. The province of Saskatchewan has yet to provide school divisions with detailed direction regarding the extent of their responsibility regarding cyber bullying or how incidents of cyber bullying should be managed (Coates, 2011). Furthermore, very few Saskatchewan school divisions have specific anti- cyber bullying policies (Coates, 2011). There is also a general lack of Saskatchewan based research in cyber bullying. Specifically, we know very little about the prevalence rates, risk factors, policies regarding, school involvement levels, and outcomes of cyber bullying in Saskatchewan. This study builds upon our previous students' research and will provide stakeholders with foundational information regarding the state of cyber bullying in Saskatchewan. It will also be the first study to examine all Saskatchewan school division anti-bullying policies as they pertain to cyber bullying and the first to document which anti-bullying programs currently in use in Saskatchewan schools include elements of cyber bullying. This study will also contribute to cyber bullying theory development. Taken together, the results of this study will allow us to recommend policy changes at the division level, assist the province in developing a coordinated approach to cyber bullying prevention and intervention, and will bridge the cyber bullying policy gap that currently exists in Saskatchewan, Canada.

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## **Extended Abstract**

Lemisko, Demchuk-Kosolofski & Hellsten

### **Background**

Most beginning teachers feel prepared for their first year of teaching (McPherson, 2000), however, the majority are shocked by their initiation into the profession (LeMaistre, 2000; Simurda, 2004) and find their first three years as the most stressful in their careers (Martin, Chiodo & Chang 2001). Novice teachers experience difficulties adjusting to school culture and expectations (Khamis, 2000). These early experiences affect beginning teachers in ways that influence them for the rest of their careers (Moir & Gless, 2001) and have implications for teacher effectiveness and career length (McCormack & Thomas, 2003). To ensure that beginning teachers thrive, we need a system which endorses mentorship, collaboration and continued growth and learning (Howe, 2008; Carroll, 2005) and which supports beginning teachers in these goals from the very beginning.

Effective mentorship has the ability to “bridge the gap that occurs when interns leave their teacher preparation programs and move into classroom responsibility, providing...access to best practices and resources beyond the classroom” (Carroll, 2005, p. 204). Induction involves how the teaching community acculturates beginning teachers (Wong, 2004; Wong, Britton & Ganser, 2005) and usually refers to structured programs (Wong, 2004; Wong, Britton & Ganser, 2005) or informal processes that may vary across schools (Bolman & Deal, 1997). Most beginning teacher induction programs include some aspects of mentorship by experienced teachers but the composition of the programs and the training of the mentors varies widely (Ingersoll & Smith, 2003). While studies have demonstrated the effectiveness of mentorship programs ([Algozzine, Gretes, Queen & Cowan-Hathcock, 2007](#); Serpell, 2000; Carter & Francis, 2001; Darling-Hammond, 2003) and demonstrated their ability to improve teacher quality - which is one of the best predictors of student success (Davis & Higdson, 2008) - mentoring programs are often limited by lack of funds (Carver & Feiman-Nemser, 2008).

Recommendations stemming from a recent review of existing beginning teacher mentorship programs in Saskatchewan include making formal mentorship programs a priority in education, providing release time (time off) for regularly scheduled meetings, providing opportunities for teachers to visit other classrooms, and providing training for the individuals who will become the mentors (Olafson, Elaschuk & Owns, 2002). While our induction-by-mentorship model provides beginning teachers with the support of experienced master teachers and attempts to follow these recommendations in a sustainable way via a partnership between the College of Education at the University of Saskatchewan and the Prairie Spirit School Division, our study is the first in Saskatchewan to focus on a mentorship program where the beginning teacher’s classroom is the central focus.

### **Purpose of the Study**

There are five specific study objectives: (1) to develop criteria for determining the identification of Master Teachers who become mentors; (2) to develop and assess a

mentorship training program for Master Teachers that incorporates existing University of Saskatchewan resources; (3) to explore the efficacy of a mentorship program that focuses on the Beginning Teacher's classroom; (4) to ensure the mentorship program is focused on student learning by providing opportunities for the team to co-construct specific curriculum foci for student learning in the Master Teacher's classroom by a Supportive Learning Substitute Teachers during the planned substitute teaching days; and (5) to provide feedback to the profession about the benefits of developing similar induction-by-mentoring programs in other school divisions.

## **Methodology**

### *Participants*

Participants in this study will include four beginning teacher/master teacher pairings who volunteer to participate. Master/mentor teachers will be recruited and invited to volunteer based on criteria developed by the research team and the leadership team in Prairie Spirit School Division. Beginning teachers will be recruited based on matching grade level interests (elementary/middle-years/secondary) or particular interests (eg., special education) and, in order to reduce travel costs and increase time in classrooms, mentoring pair partners will also be selected based on proximity.

### *Data Collection*

From September through May, the master teacher mentors will spend one half-day every two weeks in the beginning teachers' classrooms with a reverse visit to take place in November and March (beginning teachers in master teachers' classrooms). Classroom experiences may take a variety of forms including but not limited to observations, co-teaching, and coaching. Both the beginning teachers and the master teachers will be encouraged to informally document their experiences through the use of journaling and the collection of relevant artifacts

Along with scheduled classroom visits, beginning teachers and master teachers will meet in November and March in order to provide additional opportunity for reflection and planning. Individual interviews with all participants will be conducted outside of school time via telephone with the aid of an audio recording device in October (30 minutes) and February (1 hour). Focus group interviews (one hour; grouped by role) will be conducted in June.

In addition, to obtain pre-post assessments of teacher the variables expected to be affected by the induction-by-mentoring program, the beginning teachers and master teachers will be asked to complete a variety of survey instruments in September and June. Along with demographic questions pertaining to educational experience, current employment, and mentor characteristics, participants will be asked to complete the Teacher's Sense of Self-Efficacy instrument (Tschannen-Moran & Woolfolk Hoy, 2001), the Professional Teacher Identity Scale (Hellsten & Prytula, 2012), and the Perceptions of Success Inventory (Corbell, Reiman & Nietfeld, 2008). In addition, open-ended items pertaining to the strengths and weaknesses of the mentorship program will be included. Scales with demonstrated psychometric evidence will be used whenever possible.

### *Interview Questions and Data Analysis Plan:*

In all cases, the interviews will be scripted with the questions co-constructed by members of the research team and Prairie Spirit School Division personnel, but are expected to focus on professional and personal factors affecting teachers' beliefs about competence and confidence in their new roles in their school communities such as teacher identity, self-efficacy, and desired supports and resources as well as efficacy of the induction-by-mentoring model. Transcription of the interviews will be conducted by a neutral third party. Thematic analysis will be used to identify repeated patterns of meaning (Braun & Clarke, 2006). We will attempt to ensure the coding of the transcripts and the interpretations made from the codes are constructed from the raw data contained in the transcribed responses to the interview questions (Boyatzis, 1998). Results of the qualitative interviews and the quantitative surveys (and informally collected participant data) will be integrated using mixed methods research strategies.

### **Findings and Discussion**

During our presentation we will share initial findings arising from this project, which begins in September 2013. We anticipate that we will be able to share (1) the criteria developed for identify master teachers selected as mentors (2) initial assessment of the mentor training program; and (3) initial findings regarding the efficacy and sustainability of the induction-by-mentoring model we are employing.

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Teacher Readiness for Implementing Common Core State Standards

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July 2013

### Abstract

The Common Core State Standards, adopted by forty-five states, the District of Columbia, four territories, and the Department of Defense Education Activity, reflect the knowledge and skills that our young people need for a successful future. These research-based, internationally benchmarked, rigorous standards are designed to promote College and Career Readiness. However, states have not supplied their county offices of education with implementation plans, professional development, or deadlines for initial assessments. The only piece known of for sure is that the common assessment at the end of the school year will take place in 2015. School districts are looking to their county education offices for guidance. The literature shows that teachers are not prepared for the CCSS. There are several books and online resources for teachers to consume independently, but scholars warn against overwhelming educators. In this paper, teachers were surveyed to learn of their readiness for Common Core implementation. The majority of teachers are very concerned with instruction under the new standards and agree that collaboration is of the highest need.

Though the Common Core State Standards (CCSS) were approved by the California Department of Education (CDE) and posted on their website in 2010, the urgency for teachers to understand and integrate them in daily instruction has increased every year (California Department of Education, 2012). Along with the new standards, the new assessment tool, Smart Balanced Assessment Consortium (SBAC), was introduced as the state-approved assessment, intending to “build a system of assessment upon the Common Core State Standards in English language arts and mathematics with the intent that all students across this Consortium will know their progress toward college and career readiness” (<http://www.smarterbalanced.org>, 2013) in July of 2010. (See Appendix 1 for CCSS timeline). In the coming school year, the SBAC will complete field testing of the summative assessment and train school and district-level staff in formative tools. With full implementation of the SBAC test planned for 2014-2015, more districts are planning on full implementation in 2013-2014. To gauge teacher readiness during this critical time makes a difference in the ways in which roll-out will occur. Shaping supportive learning opportunities will be crucial for successful integration.

Many school districts have started to increase their professional development offerings to school staff. For example, the Riverside County Office of Education currently has an eleven-page catalog of low-cost, specific Common Core professional development opportunities available to teachers, administrators, and support staff during this school year to aid in this challenge. A large portion for clearer usage of the materials for teachers to access is available online and may be meant for either independent study or for schools to “assign” during staff development via handouts, PowerPoints, and professional development modules. Achieve the Core is California’s recommended website that offers “free, high-quality resources for educators to implement the Common Core State Standards” ([www.achievethecore.org](http://www.achievethecore.org)). But usage of this

resource, or resources like it, may not be enough of what teachers need to feel ready. Because there is no real required implementation program or date from the California Department of Education other than assessment in 2014-2015, the professional development opportunities offered by the Riverside Office of Education, and similar county programs, speak positively to their commitment to proper preparation. Clearly, any teacher that has been in the profession since 1999 needs support for learning and implementing the new state standards. Curriculum planning, classroom management, instructional strategies, and assessments will change. Readiness to make these changes is the focus of my study.

In general, teacher preparedness for instruction and all the duties that are expected of teachers are well-discussed issues. However, few studies are currently available that examine teacher preparedness for integrating the Common Core State Standards. Therefore, a face must forcibly be put on this topic. While student achievement data related to this shift in curriculum will surface, how teachers are affected is a valuable piece to consider. Teachers are the common denominator when it comes to standardized test accountability, and yet, the literature reports that teachers are not ready for the CCSS. Teacher evaluations based on test scores is a normal practice in many schools. How can teachers earn a fair evaluation without support for using new standards that prepare for standardized testing? That is a different question for a different study, and one that is prevalent in current literature.

### **Review of the Literature**

Fletcher's 2012 article, "*It's the Teacher, Stupid*," suggests teachers are a forgotten element in the discussions surrounding the Common Core State Standards. Ability is not the issue, as the report continues. "But what is an unknown is how ready teachers are to instruct students in the Common Core State Standards and thus in the manner in which they will be

tested” (p. 26). Fletcher presents five questions that must be addressed to measure teacher readiness, including familiarity with technology, sufficient time, and comprehension of the standards themselves. He makes an interesting analogy between current educational trends and a waterbed: “Technology, curriculum and instruction, assessment, and professional learning are all part of the same structure and you can’t make an impression on one area without the others quivering in response” (p. 26). Indeed, current and future teachers should understand that all four pieces are interrelated and require deep knowledge. Fletcher calls for an “all-out collaborative planning effort” among all school and district level staff to ensure teachers are ready. He suggests a five step plan to accomplish this task. Collaboration between teachers for the standards as well as technology planning will be most crucial, as the Smarter Balanced Assessment is a computer-based test. Teachers at any level of computer literacy need to become fluent in classroom technology that will not only prepare students for the exam, but also integrate advanced technology in daily instruction to achieve the 21<sup>st</sup> century demands of college and career. The days of Judy clocks and chalkboards are gone, making way for technology beyond dry-erase boards and overhead projectors. Fletcher also suggests giving teachers the flexibility of learning from mistakes. Even with the best-intentioned implementation plan, perfection is not the point; teachers will need to experiment, find the best practices, reflect, collaborate, and learn from mistakes.

Holliday and Smith studied Kentucky’s implementation plan in their 2012 article, “*Leading Common Core Implementation*,” to serve as a model as the nation’s first adopting state. The authors began quoting an article from Washington Post education columnist, Jay Mathews, who interviewed hundreds of highly effective teachers who “significantly raised student achievement...How teachers are trained and supported in the classroom is what matter[ed]”

(Holliday and Smith, 2012, p. 13). Clearly, research supports what we already know: teachers have an incredible task ahead, and readiness in the form of preparation makes a difference. The authors move on to explain how Kentucky developed their plan for Common Core implementation two years ago, as well as recognizing the need to partner with higher education. The plan included establishing professional learning communities (PLC), using principals as instructional coaches, and evaluating progress based on student work. Committing to working in unity, consultants from the state department of education, university faculty, district leaders, principals, and teachers, developed a three-year curriculum for each role and a “tailored set of objectives for implementing the standards, correlating to the roles” (Holliday and Smith, 2012, p. 14). Without a doubt, Kentucky will be successful in their roll-out efforts, and will arguably be a state with high student achievement. They will certainly be a model for states as implementation progresses.

In the Center for Educational Policy’s report, *“Year Two of Implementing the Common Core State Standards: States’ Progress and Challenges,”* Kobner examined the progress of transitioning in 35 Common Core State Standards-adopting states, including the District of Columbia, in the fall of 2011. Kobner’s survey asked respondents to select whether the challenges of adoption were major, minor, nonexistent, or too soon to tell. In her key findings, the majority of the states in the survey believed that the CCSS are more rigorous than previous state academic standards in math and English language arts, and was taking steps to familiarize state and district officials with the new standards and to align curriculum and assessments. However, as I’ve addressed, most of the states in Kobner’s survey did not expect to fully implement the standards until 2014-15 or later. In addition, a majority of the responding states “caution that having adequate resources is a major challenge to full implementation of the

CCSS” (p. 12). While it is assuring that many states are on board, there was still no definitive answer for readiness. This enforces the notion that teachers will need support. However, it did not mention the effects of Common Core on teacher evaluations.

Struggle is the common theme in Gewertz’s 2012 article, “*Educators in Search of Common-Core Resources*.” Curriculum developers and teachers complain of there being “nothing” available, were working hard despite a lack of direction from district leaders. The lack of directives has led many to either develop Common Core road maps on their own or simply wait until concrete guidance from administration convenes, or worse, refusing to move onward with progress, as one anonymous Colorado teacher was quoted as saying, “As far as I’m concerned, it’s better if we just keep doing what we know works, instead of jumping at every new thing just because someone decides it will work” (Gewertz, 2012). Thankfully, states that have created in-depth materials for Common Core curriculum and instructional strategies have been utilized. For example, states such as Ohio and New York have extensive, online, free resources, while Kansas was reported as having the best source of model lesson plans. However, as the literacy consultant to the state’s education department warns, “It can be a double-edged sword, because teachers can be overwhelmed with information” (Gewertz, 2012). Indeed, any Google or Pinterest searches on Common Core are met with thousands of resources. Teachers, whether new or veteran, will need a new storehouse of instructional methods and activities, but need to filter through a lot before they find what will work for their style.

The Standards for Professional Learning outline the characteristics of professional learning that leads to effective teaching practices, supportive leadership, and improved student results (Learning Forward, 2012). Among the videos and web opportunities, articles on

professional development are the main focus on this organization's site. In particular, Stephanie Hirsh's reporting on connecting these standards to the Common Core is relevant to this research. As stated in my hypothesis, "high-quality professional learning" is the link to successful CCSS implementation (Hirsh, 2012). The author eloquently highlights that "the cruelest thing we can do to teachers is to poorly prepare them for today's challenges, isolate them in dysfunctional environments, treat them as line workers while calling them professionals and then blame for the woes we face" (p. 1). Certainly in any profession, proper preparation and ongoing training are crucial for change. Crafting these opportunities is essential as the demands of critical thinking and college and career readiness will lie on the shoulders of educators. It is also the opinion of the author that expectations of students will mirror expectations of teachers; therefore, assisting teachers will be as critical.

Similarly, in Jenkins and Agamba's 2013 study, they found professional development for Common Core implementation is in fact the missing link. The challenge represents two essential issues: "K-12 teachers will require well-designed professional development for the successful implementation of the CCSS, and a mechanism must be designed that will successfully foster higher education and K-12 collaboration" (Jenkins & Agamba, p. 71, 2013). Certainly, after the California Community College System Strategic Plan was introduced in 2006, strides have been made to bridge the two worlds of K-12 and higher education. As CCSS call for college readiness, these steps must be taken faster and more seriously. The authors point out a higher need to "ensure seamless education" (p. 72). For veteran teachers, they warn, helping them make connections to higher education may prove challenging. How can we measure if professional development is effective? The authors suggest "teacher change happens only after teachers see desired learning outcomes in their students following classroom implementation" (p. 72). They

cite a 2008 study that “suggested teacher change occurs during, and directly following, professional development and consequently is evidenced prior to any measures of student achievement” (p. 73). Ongoing assessment, both formative and summative will be necessary in order to check accomplishment of student outcomes. Teachers should not wait until benchmark exams to know whether the new standards are “working” in their instruction. Constant checks for understanding will lead teachers in their new instruction and will help direct future planning. It is important that teachers not give up when things do not go as planned. This is the caveat of teaching; always have a plan B or C ready. The authors use the state of Idaho as a model of effective professional development linked to the Common Core. Idaho “operates within a framework that is based on immersion practice; teachers can collaboratively explore the CCSS and take ownership of their own professional development as they unpack, crosswalk, and align the standards both vertically and horizontally” (p. 78). This allows teachers to not only teach to the new CCSS, but also create possible tests in anticipation of the Smarter Balanced assessments. Without a doubt, Idaho is not only supporting teachers but giving them the autonomy to lead their own professional development.

Sawchuk (2012) examined readiness at the post-secondary level. This interesting report on future teachers’ readiness to teach Common Core State Standards pointed out what higher education institutions in Illinois are doing to prepare students. This topic has largely been left out of CCSS implementation discussions, as these students have not yet earned their own classrooms. However, it does bring up a crucial point: future teachers need to come into the classroom with knowledge of the new standards. Why assign lesson plans aligned to the old standards, only to have to replace them a year later? The author quotes the Illinois State Schools Superintendent, Christopher Koch, “Why pay for it in professional development later, when it’s

much more costly”? This discussion, as Sawchuk reports, is not without conflict, citing obstacles that currently and will occur, such as “adding and deleting courses, potentially a necessary step in revamping curricula” (p. 8). Though the meeting of Illinois’ institutions was simply a first step in addressing the new standards, it provided state officials with ideas to consider in terms of licensure and academic freedom.

### **Hypothesis**

Teachers are not ready for implementing the standards, because they have not had directives and/or plans to implement until now. Are teachers prepared for CCSS instruction? How will teachers prepare for CCSS implementation?

### **Methodology**

A workshop called “Champion Teaches and Common Core: How to Lead and Guide Your Team with Highly Effective Practices,” located at the Riverside County Office of Education (RCOE) in Riverside, California, and was a voluntary session open to anyone in Riverside and San Bernardino counties. The RCOE is responsible for 23 school districts, and oversees extension offices in Indio and Murrieta. The session provided participants with research, adaptive teaching techniques, strategic planning tools, and digital tools to embed technology in Common Core instruction. It also incorporated a “flipped” model of learning, in which we as learners needed to complete tasks before coming to the session. This maximized our time with the facilitator, and allowed those inexperienced with some of the Common Core language to become familiarized in advance. Snowball sampling was applied for this inquiry. It is hard to reach teachers as participants during the summer months, however, the group present at the workshop was interconnected by the same goal: to gain knowledge in rolling out

implementation of CCSS. The population included 21 teacher leaders wanting tools to lead their sites in CCSS implementation. The response rate was 76%.

The questionnaire featured 20 questions. Questions 1 and 2 were dichotomous; either the participants read through the standards or they didn't. In Question 20, respondents had to choose which county they worked in; either Riverside or San Bernardino. Questions 3 through 19 were Likert scale questions, coded as: 1=Strongly Disagree, 2= Disagree, 3=Agree, 4=Strongly Agree

## Results

The average respondent had been teaching over 10 years; 66.7% indicated more than ten years of teaching experience, and was from Riverside school districts. The sample was not evenly distributed at 70% female and 30% male.

Appendix 3 breaks down the Likert scale questions that indicate teacher readiness for the CCSS.

Many participants wrote in answers if they didn't like the restriction of the numbers, or felt their answers required explanation. Questions 1 and 2 were dichotomous; either yes or no. However, many participants wrote in other numbers, but this was not a leveled question.

## Descriptive Statistics & Frequency Tables

**I have read through the CCSS for my grade level**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	25.0	40.0	40.0
	Strongly Agree	6	37.5	60.0	100.0
	Total	10	62.5	100.0	
Missing	System	6	37.5		
Total		16	100.0		

Before coming in to the workshop, participants were asked to complete tasks to better familiarize themselves with the tools we'd be utilizing. 40% of the respondents had not read the Common Core State Standards for their grade level and 30% had not read under their subject matter.

**I have read through the CCSS for my subject matter.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	18.8	33.3	33.3
	Strongly Agree	6	37.5	66.7	100.0
	Total	9	56.3	100.0	
Missing	System	7	43.8		
Total		16	100.0		

**I have concerns creating CCSS instruction**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	12.5	12.5	12.5
	Disagree	1	6.3	6.3	18.8
	Agree	10	62.5	62.5	81.3
	Strongly Agree	3	18.8	18.8	100.0
	Total	16	100.0	100.0	

**I have concerns creating CCSS pacing plans**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	6.3	6.3	6.3
	Disagree	2	12.5	12.5	18.8
	Agree	9	56.3	56.3	75.0
	Strongly Agree	4	25.0	25.0	100.0
	Total	16	100.0	100.0	

**I have concerns creating and implementing CCSS formative assessments**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	18.8	18.8	18.8
	Agree	8	50.0	50.0	68.8
	Strongly Agree	5	31.3	31.3	100.0
	Total	16	100.0	100.0	

A large percentage of teachers had concerns with implementation of CCSS instruction, pacing plans, and formative assessments. But the level of concern for the SBAC was distributed across the board. Teachers did not have concerns with classroom management.

**I have concerns with the SBAC**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	6.3	7.7	7.7
	Disagree	4	25.0	30.8	38.5
	Agree	5	31.3	38.5	76.9
	Strongly Agree	3	18.8	23.1	100.0
	Total	13	81.3	100.0	
Missing	System	3	18.8		
Total		16	100.0		

**I have concerns implementing classroom management that supports CCSS**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	6.3	6.7	6.7
	Disagree	8	50.0	53.3	60.0
	Agree	3	18.8	20.0	80.0
	Strongly Agree	3	18.8	20.0	100.0
	Total	15	93.8	100.0	
Missing	System	1	6.3		
Total		16	100.0		

**I can best prepare for implementing CCSS this fall by participating in off-campus workshops**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	18.8	18.8	18.8
	Agree	6	37.5	37.5	56.3
	Strongly Agree	7	43.8	43.8	100.0
	Total	16	100.0	100.0	

**I can best prepare for implementing CCSS this fall by participating in on-campus workshops**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	12.5	13.3	13.3
	Agree	7	43.8	46.7	60.0
	Strongly Agree	6	37.5	40.0	100.0
	Total	15	93.8	100.0	
Missing	System	1	6.3		
Total		16	100.0		

Many teachers saw workshops as a viable option to gain more knowledge for CCSS implementation, whereas attending virtual workshops, webinars, was almost evenly split.

**I can best prepare for implementing CCSS this fall by participating in CCSS webinars**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Disagree	8	50.0	50.0	50.0
Agree	3	18.8	18.8	68.8
Strongly Agree	5	31.3	31.3	100.0
Total	16	100.0	100.0	

**I can best prepare for implementing CCSS this fall by reading the CDE-suggested titles**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Disagree	5	31.3	31.3	31.3
Agree	5	31.3	31.3	62.5
Strongly Agree	6	37.5	37.5	100.0
Total	16	100.0	100.0	

**I can best prepare for implementing CCSS this fall by researching performance tasks online**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Agree	10	62.5	66.7	66.7
Strongly Agree	5	31.3	33.3	100.0
Total	15	93.8	100.0	
Missing System	1	6.3		
Total	16	100.0		

**I can best prepare for implementing CCSS this fall by taking SBAC practice tests**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Disagree	1	6.3	7.7	7.7
Agree	9	56.3	69.2	76.9
Strongly Agree	3	18.8	23.1	100.0
Total	13	81.3	100.0	
Missing System	3	18.8		
Total	16	100.0		

Becoming familiar with the SBAC was important to teachers.

**I can best prepare for implementing CCSS this fall by talking with other teachers who've implemented CCSS at their site**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	6	37.5	42.9	42.9
	Strongly Agree	8	50.0	57.1	100.0
	Total	14	87.5	100.0	
Missing	System	2	12.5		
Total		16	100.0		

**I can best prepare for implementing CCSS this fall by working through the CCSS on my own**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	18.8	21.4	21.4
	Disagree	6	37.5	42.9	64.3
	Agree	3	18.8	21.4	85.7
	Strongly Agree	2	12.5	14.3	100.0
	Total	14	87.5	100.0	
Missing	System	2	12.5		
Total		16	100.0		

Working on becoming knowledgeable in the Common Core State Standards on their own was not a favored choice from teachers, with 64% disagreeing. Collaboration with others was preferred on several levels.

**I can best prepare for implementing CCSS this fall by collaborating with grade level colleagues at my site**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	6.3	7.1	7.1
	Agree	7	43.8	50.0	57.1
	Strongly Agree	6	37.5	42.9	100.0
	Total	14	87.5	100.0	
Missing	System	2	12.5		
Total		16	100.0		

**I can best prepare for implementing CCSS this fall by collaborating with course-alike colleagues at my site**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	6.3	7.1	7.1
	Agree	3	18.8	21.4	28.6
	Strongly Agree	10	62.5	71.4	100.0
	Total	14	87.5	100.0	
Missing	System	2	12.5		
Total		16	100.0		

The Cronbach's Alpha is valued at .797 which indicates good internal consistency.

### **Inferential Statistics**

Respondents confirmed that if they read through the CCSS for their grade level, they also read through the CCSS for their subject matter ( $r=.791$ ,  $p=.011$ ). Respondents who read through the CCSS for their grade level did not agree that they have concerns with the SBAC ( $r=.786$ ,  $p=.021$ ). There was a direct relationship between concerns with the SBAC and implementing classroom management that supports the CCSS ( $r=.843$ ,  $p<.001$ ). The strongest direct relationship was between creating CCSS pacing plans and CCSS instruction ( $r=.923$ ,  $p<.001$ ).

### **Discussion**

Are teachers prepared for CCSS instruction? Over 50% of respondents agreed that they had concerns with Common Core instruction, pacing plans, and formative assessments. Teachers do not feel prepared. How will teachers prepare for CCSS implementation? Collaborating with others was the most agreed upon method. The most popular responses were collaborating with teachers that had already implemented the Common Core at their site, as well as grade level colleagues and course-alike colleagues.

Teachers who had read through the CCSS for their grade level should have read for their subject, since the CCSS are written in matrix form. The fact that I did not have a 100% correlation between these two variables is very odd. The relationship between those teachers who had read through the CCSS for their grade level and those who did not have concerns with the SBAC suggests that they have background knowledge in the SBAC, as the CCSS do not include test questions. However, the SBAC has been very visible in the past year in terms of communication, transparency, and sample test questions.

### **Recommendations**

How much knowledge is enough? Should the CDE have enforced stricter implementation deadlines to ensure district readiness? If we consider how teachers ask students to prepare for demonstrating knowledge, those same techniques would prove useful in gaining feedback about teacher readiness, especially knowing what teachers need most. Time and resources seem to be the most desired.

### **Limitations of Study**

The limitations of this study were largely due to the season. In the summer months, many teachers are on vacation, not participating in a voluntary workshop. I would have liked a larger

sample. Also, giving the questionnaire at the end of a long training day may have reduced my response rate. I would have preferred to administer my survey at the beginning of the workshop.

### **Future Research**

Since my questionnaire was distributed at a voluntary workshop, there is a level of intrinsic motivation and self-determination that would be interesting to research. I would like to conduct qualitative interviews as we move through the year, replicating initial survey at the beginning of the 2014-2015 school year to examine changes in attitudes of readiness. This data should be used by school administrators to communicate with district leaders. This needs to take priority in program roll-out because when the SBAC is in place, teachers need to be ready for accountability discussions. To continue this, consistent support via workshops and training should be offered and feedback sought. Feedback tools such as surveys and questionnaires from teachers are an easy and fast way to develop directives in planning implementation.

My goals are four-fold: Teachers should be properly prepared and ready for Common Core implementation. Student achievement will be affected positively if teachers are prepared. Evaluations need to consider the amount of preparation given. Credential-granting institutions need to prepare future teachers immediately. If these goals are met, we will have made history with the first federal and state curriculum plan that effectively measures students' college and career readiness. This is a major turning point for K-18 education, and it is my hope that all stakeholders act accordingly for the best interest of teachers and students.

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## **Appendices**

**Appendix 1: CCSS Timeline**

**Appendix 2: Questionnaire**

**Appendix 3: Charts**

**HICOEdu Conference Proceedings – Doubet and Southall – Submission ID# 407**

**Title:** Integrating Reading and Writing Instruction: The Role of Professional Development in Shaping Teacher Perceptions and Practices

**Synopsis:** The increased emphasis on preparing students to be college and career ready has significant implications for the teaching of English/Language Arts. This study examines middle and high school English teachers' perceptions and practices regarding authentic, integrated reading and writing instruction and the potential for staff development to impact these perceptions and practices. Findings indicate that focused professional development can move teachers to increased confidence and proficiency in integrating the instruction of reading and writing.

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## Abstract

Recommended pedagogy for middle-school and high-school (grades 6-12) English education integrates the teaching of "the language arts as interactive processes" (Maxwell & Meisner, 2001, p.3); in other words, teachers should weave the instruction of literature and writing together as two parts of one whole. Recommended practices include asking students to respond to reading through writing, to cite information from reading in writing, and to analyze reading for writer's craft in order to emulate that craft in student writing (National Council of Teachers of English [NCTE], 2004). However - with the exception of a focus on literary analysis - teachers of English/language arts continue to teach literature and writing as separate units, topics, and skills (Graham & Herbert, 2010). The separate and distinct articulation of reading and writing goals (e.g., Common Core State Standards, 2010) may contribute to this practice, as might the absence of training in effectively and authentically meshing the instruction of the language arts.

Since integrated instruction is recommended but seemingly not often practiced, research questions for this study are three-fold: 1) What are teachers' perceptions of and practices regarding the relationship between reading/literature instruction and writing instruction; 2) What are the influences on teachers' beliefs and practices regarding the instruction of language arts; and 3) How might a staff development experience that models integrative techniques affect teachers' perceptions and practices of melding reading/literature and writing instruction in an effective and authentic fashion?

Participants (n=16) in this qualitative study were teachers of high school English and middle school language arts who voluntarily participated in a week-long, content-focused professional development program in the southeast region of the United States in June, 2013. Prior to the intervention, participants were surveyed to determine their beliefs and practices regarding the integration of reading/literature instruction with writing instruction. They then participated in the intervention: two 1.5 hour trainings on techniques for successfully integrating literacy instruction, as well as the rationale for using such strategies. Techniques were drawn from the work of Beers (2003), Gallagher (2011) and Spandel (2012) and required participants to engage in close reading of texts for both meaning and writer's craft, and then to weave the techniques found in those texts into their own original pieces of writing. Time for reflecting on classroom applications was provided. Immediately following the training, participants were surveyed again regarding 1) their beliefs about the integration of reading/literature and writing instruction, and 2) their plans to implement integrative strategies in future lessons. Participants will receive a follow-up email with a questionnaire in early December, 2013, asking them to reflect on their post-workshop instructional practices. Those who choose to continue their participation will return the questionnaire to the researchers by mid-December, 2013.

Data analysis utilizes Miles, Huberman, & Saldana's (2013) post-positivist approach, which asserts that there are causal descriptions at the heart of social phenomena. Initial codes were derived from the literature (e.g., Brighton & Hertberg, 2004; Gallagher, 2011; NCTE, 2004); those codes serve as a conceptual framework through which to analyze the data. Data reduction occurs by organizing/clustering data from all sources around teachers' reported beliefs and instructional plans and practices.

Initial results indicate that 11 of 16 participants entered the study with a "disconnected" view of language arts pedagogy. Four of these 11 participants articulated the *belief* that reading/literature and writing instruction should be connected, but could not describe how to successfully achieve this integration in their practice. All four of these participants emerged from the study articulating plans to change their practices, but these changes remained at the surface or "strategy" level, and responses indicated no change to underlying philosophical beliefs. The remaining seven of the 11 could not articulate a need for instructional integration upon entering the study; they reported teaching reading/literature and writing as separate, distinct instructional units. All seven of these participants emerged from the study citing a new understanding of integrated literacy instruction as well as specific plans and strategies for integrating reading/literature and writing instruction in their classrooms during the 2013-14 school year. There was, however, a distinct difference in the depth of understanding demonstrated by respondents; some indicated surface level changes while others discussed a change in philosophy.

Five of 16 participants entered the study with a previously established view of literacy instruction as connected and integrated, although the complexity of their approaches varied. All five of these participants traced these beliefs and practices to either specific staff development opportunities or to the influence of mentor teachers. All five participants emerged from the intervention with a self-described reinforcement of their belief in the value of integrating reading/literature and writing instruction. In addition, these participants discussed an appreciation for additional resources and articulated plans to incorporate these newly acquired techniques into their instruction during the 2013-14 school year.

The study's preliminary conclusions indicate middle and high school English teachers believe that the various facets of reading/literature and writing instruction are connected and should be integrated; however, these same teachers may neither fully understand what "integration" means, nor be accustomed or equipped to deliver instruction in an integrated fashion. Professional development is valuable in shaping teachers' pedagogies and helping teachers put their beliefs into practice by a) recognizing where teachers are, philosophically, in their beliefs about integrated literacy instruction, b) instilling confidence in the value of integrated literacy instruction, and b) providing specific strategies and tools to help them enact their beliefs in the classroom.

Initial findings of this study indicate that teachers' practices would improve with access to sustained professional development in the integration of reading/literature and writing instruction. Such training experiences will be most effective if they adhere to the following three criteria: 1) emphasize practice rather than theory, providing instruction on specific integrative strategies; 2) feature modeling of recommended strategies within the training session, requiring teachers to themselves engage in close reading and original writing; and 3) allow time for reflection on how such literacy strategies connect with teachers' philosophies and can be woven into the curricula for teachers' particular classroom contexts.

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**Enhancing music learning with digital tools:  
A case study of a student using iSCORE**

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## **Abstract**

iSCORE is a digital tool designed for students who take lessons from independent music teachers. One of the challenges of this learning format is that students must develop strategies to practice on their own between lessons. iSCORE can help meet that challenge. This paper describes a case study of a 15-year-old pianist who learned to play a difficult piece of repertoire by using iSCORE to archive and compare performances, develop strategies, and reflect on his learning.

### **Enhancing music learning with digital tools: A case study of a student using iSCORE**

Since the invention of the printing press, new technologies have had an immense influence on how we teach music and on what music we teach. Likewise, the digital age presents myriad opportunities for teachers to use new tools to transform their teaching. It also—sometimes painfully—causes teachers to critically examine the approaches they take to teaching music, including their pedagogical approaches and musical core content.

It is commonly acknowledged that most, if not all, of our students are digital natives; that is, they have only lived in a world with Google searches, emails, and iPods (Prensky, 2001). Conversely, many teachers are digital immigrants, meaning that their original resources for learning and communicating were hard copies of music scores and face-to-face interactions with students, parents, other teachers, and musicians. Consequently, most studio teachers have entered the digital world as newcomers to a strange land. And like other immigrants, digital immigrants wish to become more proficient with technologies and to develop their expertise in ways that will allow them to work effectively to the digital age. However, the challenge to enter a digital world is made more formidable by the isolation that often characterizes the work context of the music studio teacher, as many music teachers work independently in their studios and rarely interact with other teachers in contrast to music teachers working in school classrooms (Feldman, 2010).

Another crucial difference between studio music instruction and classroom music instruction is that students of independent music teachers are expected to practice without their teacher's presence, applying, at home, the ideas demonstrated and discussed during lessons. Often they do this without help from an adult. These students must prioritize the ideas presented at their lessons, clarify their goals, execute strategies to meet these goals, and reflect on their progress. Thus, self-regulatory behaviours are particularly important for students who

learn music through the studio lesson tradition.

Researchers have found that self-regulation is an important component of effective learning in general (Zimmerman, 2000; Zimmerman & Schunk, 2011). Self-regulation is especially important for effective practice of musical instruments (Bartolome, 2009; McPherson & Renwick, 2001; 2011). Less-skilled musicians have not developed the self-regulatory habits of advanced musicians (McPherson & Zimmerman, 2011; Nielsen, 2001; Oare, 2011) and often do not know how to structure their practices between lessons (McPherson & Renwick, 2001; 2011). McPherson and Zimmerman (2002) name six student characteristics that support self-regulated learning in music: (a) students are motivated to set goals; (b) students possess methods to practice on their own; (c) students plan and manage their time; (d) students self-monitor and evaluate their performance behaviour; (e) students structure physical environments for optimal learning; and (f) students use social connections to seek help.

A more nuanced way of characterizing the learning that occurs both during the lesson and between lessons is found in Sameroff's "transactional regulation" model (Sameroff, 2010). Under this model, it is suggested that co-regulation, that is a combination of self-regulation and other forms of external regulation—such as the support provided by music teachers—is necessary to support music learning, towards the ultimate goal of developing independent musicianship. Drawing on Sameroff's theory of transactional regulation, McPherson and his colleagues claim that in music learning we do not move linearly from other regulation to self-regulation, but rather, self-regulation includes other elements of regulation, just as other regulation is tempered with self-regulatory abilities (McPherson, Davidson, & Faulkner, 2012; Sameroff, 2010). Other regulation includes the input of ideas and strategies from teachers during lessons, but also from parents and peers in the time between lessons. McPherson, Davidson, and Faulkner (2012) followed 157 students in Australia over a 14-year period, and

found that environmental factors, such as having supportive parents, performance opportunities, and positive peer interactions, served to regulate and enhance student learning.

The premise for our long-term research program is that specially designed technological tools can reduce the isolation experienced by teachers and can also support the development of lifelong musicians. We have formed a tri-institutional partnership amongst Queen's University, the Centre for the Study of Learning and Performance at Concordia University, and The Royal Conservatory, in order to develop software and to conduct research on how 21<sup>st</sup> century learners involved studio music instruction can benefit from interactive online tools.

The present paper focuses on the use of iSCORE, one of the digital tools we have developed to support independent music instruction. iSCORE is an online learning portfolio that was created to enhance students' ability to self-regulate. It contains features to support students as they develop effective practice strategies and learn to reflect on their progress. In addition, iSCORE's web-based platform allows for both asynchronous and synchronous interactions among students and teachers. iSCORE is available without charge from The Royal Conservatory ([www.rcmusic.ca](http://www.rcmusic.ca)). Teaching support and samples of student work appear on a supporting website: [www.iscorenews.com](http://www.iscorenews.com).

To date, we have conducted a series of studies involving over 30 teachers, 50 parents, and over 150 music students (e.g., Brook, Troop, & Upitis, 2011; Upitis, Abrami, Brook, Troop & Varela, 2012; Upitis, Brook, & Abrami, 2012; Upitis, Brook, Abrami, Varela, & Elster, 2012; Upitis, Varela, & Abrami, 2013). Data sources have included interviews, observations, surveys, and iSCORE portfolio data. This particular paper describes a case study of one student's work to show how it helped this student accomplish a challenging music assignment.

### **Method**

Data for the case study of one student's use of iSCORE were gathered and analyzed according to conventional case-study protocols (Yin, 2009). The student was a 15-year-old

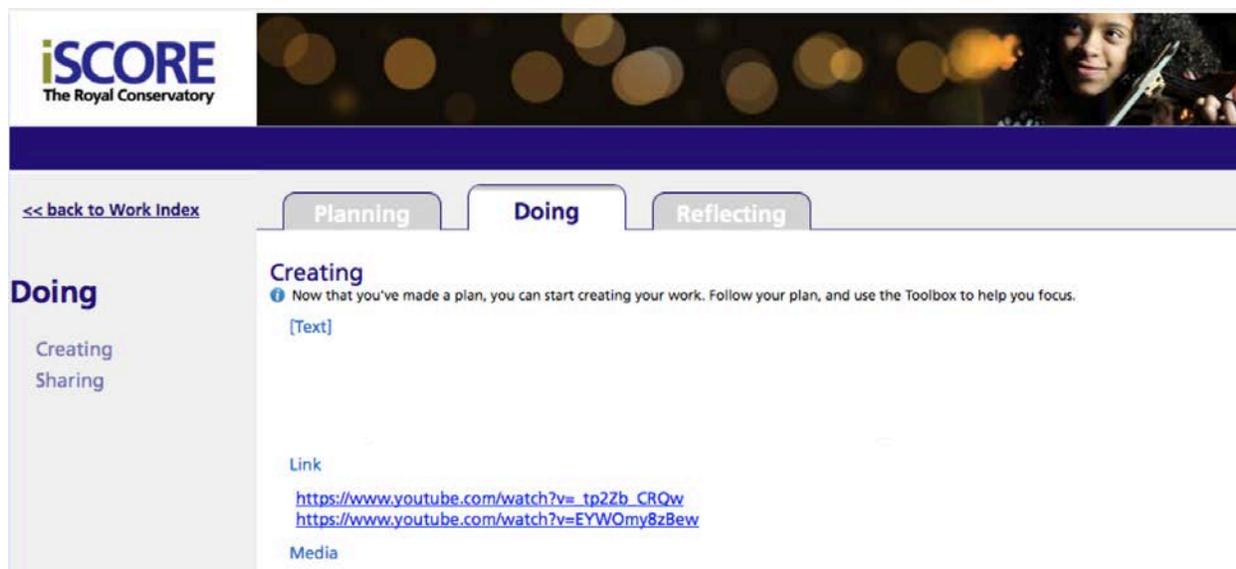
pianist who had been using iSCORE, and its predecessor ePEARL, since he was 12 years of age. His task was to learn a “quick study” piece for a local music festival. This entailed learning a 20<sup>th</sup> century Bagatelle by Alexander Tcherepnin (Opus 5, No. 4) to a performance standard in a 48-hour period. At the time of the quick study competition, the student’s regular music teacher was out of town. Consequently, he sought the assistance of two other music teachers who were available to help him master the piece. He also elected to use iSCORE to support his learning. Both of his supporting teachers are authors on the present paper.

Data included direct observations and interactions with the student for six hours on the first day and four hours on the second day. These observations and interactions were made by the supporting teacher-researchers, both of whom are music pedagogues and educational researchers. Interactions included helping the student directly with notes and interpretation, as well as offering suggestions and strategies for mastering the piece. One of the researchers was present at the performance of the piece on the morning of the third day. In addition, the student’s archived performances of the piece, links to other performances, the strategies he employed to learn the piece, and reflections on his learning were available from the iSCORE portfolio and also served as data sources. A 20-minute interview with the student after the performance, as well as an informal conversation two months later, rounded out the data collection. During the interview, the student was asked to comment on whether and how iSCORE supported his learning.

## **Results**

The student began to learn the Bagatelle by attempting to sight-read the score in its entirety. When this proved to be beyond his abilities, he called upon one of the music teachers to play it for him. This gave him a sense of the piece, but did not provide something for further reference while he was practising on his own. Consequently, he began to shape his iSCORE project artifact by uploading links to YouTube videos of several performances of the work. The figure below shows the first entries that he made to his portfolio. After naming the project, he

immediately clicked on the “doing” tab and entered the links that he had found, commenting, “I’ll think more about the planning later. Right now, I just need to have these to listen to.”



*Figure 1. Links to YouTube videos of Bagatelle Opus 5, No. 4 by Alexander Tcherepnin*

After listening to the recordings several times, the student began to learn a figure in the left hand, which repeats several times throughout the work. This was a difficult figure to learn because it was unfamiliar in both sound and feel. The first interval was a solid major 7<sup>th</sup> – an interval rarely encountered in the piano repertoire. In fact, much of the technique was new and challenging: quartal harmonies meaning that fourths, rather than the familiar thirds, were prevalent, and an inner melody needed to be featured.

The student then began to systematically plan how to learn the piece in the 48 hours available to him. To do this, he went to the planning tab and identified specific goals and strategies that would help him master the piece. Some of these strategies, such as separating the right hand and left hand, were familiar ones that he had employed in learning other repertoire, and he offered these immediately as he began typing in the text. Others were new to him, and were suggested by one of the two teachers. In this way, there was transactional regulation

evidenced: the student was able to be self-regulated with familiar approaches and techniques, and incorporated the strategies suggested by others to supplement what he already knew.

The figure below shows the filled out planning page. Most of this was completed on the first morning of the first day, with more complex strategies (e.g., playing the landing chord of the four hardest measures) being introduced on the evening of the first day and morning of the second day.

The screenshot shows the iSCORE interface for a planning task. The header includes the iSCORE logo (The Royal Conservatory) and a navigation bar with Home, Work, Overview, Calendar, Sharing, Files, Mailbox, Settings, and Logout. The main content area is titled 'Planning' and includes a 'Save' button. The task is titled 'Quick Study' and has a label with colored squares and a heart icon. The 'Task Description' section contains the text: 'I have to learn a grade 8 level piece in 48 hours and perform it for a judge after the 48 hours has passed.' The 'Criteria' section contains the text: 'I will be evaluated by the judge in: notes and rhythm, dynamics, technicality, musicality, memory. Sitting on the bench!'.

**iSCORE**  
The Royal Conservatory

Home Work Overview Calendar Sharing Files Mailbox Settings Logout

Planning Doing Reflecting Save

Title: Quick Study

Label: [Red] [Orange] [Blue] [Green] [Purple] [Heart]

Date Started: February 25 2013

Last Saved: February 27 2013

**Task Description**  
In your own words, write what the assignment is about.

Text  
Please press the Save button when you are done.

I have to learn a grade 8 level piece in 48 hours and perform it for a judge after the 48 hours has passed.

**Criteria**  
How will you be evaluated?

Text  
Please press the Save button when you are done.

I will be evaluated by the judge in:

notes and rhythm  
dynamics  
technicality  
musicality  
memory

Sitting on the bench!

Figure 2. Planning page – task description and criteria

The screenshot displays the iSCORE interface for the 'Planning' phase. At the top, the iSCORE logo (The Royal Conservatory) is visible. A navigation bar includes 'Home', 'Work', 'Overview', 'Calendar', 'Sharing', 'Files', 'Mailbox', 'Settings', and 'Logout'. The main content area is divided into three tabs: 'Planning' (selected), 'Doing', and 'Reflecting', with a 'Save' button on the right.

**Planning**  
 A plan is an important first step in creating your work. This step involves understanding your task, setting goals and acknowledging your motivation.

**Task Description**  
 Criteria  
 Goals  
 Schedule  
 Motivation

**Task Goal**  
 Is this assignment going to help you work towards any of your General Goals? Use the Toolbox on the bottom to link any relevant General Goals to this task goal  
 Learn Piece  
 General Goals Connected Learn how to sight-read harder pieces

**Supporting Task Goal**  
 Check rhythm  
 Strategies  
 What processes or actions will direct you towards your goal? Select or add your learning strategies  
 metronome  
 teacher

**Supporting Task Goal**  
 Dynamics  
 Strategies  
 What processes or actions will direct you towards your goal? Select or add your learning strategies  
 be aware of softs

**Supporting Task Goal**  
 Notes  
 Strategies  
 What processes or actions will direct you towards your goal? Select or add your learning strategies  
 play first "landing chord" of the 4 most difficult bars

**Strategies**  
 What processes or actions will direct you towards your goal? Select or add your learning strategies  
 Analysis  
 be aware of softs  
 analysis  
 teacher  
 separate RH AND LH  
 metronome  
 Divide the piece  
 play first "landing chord" of the 4 most difficult bars  
 play difficult sections several times before each play through

Figure 3. Planning Page – Task goals and supporting task goals

One of the most important ways that iSCORE supported the student in learning the Bagatelle was the use of the annotation feature. The annotator allows the musician to upload an audio or video recording, and then to comment – in real time – on the recording. These comments can be made by the student, by teachers, by parents, and by peers. In this particular case, the student offered a number of comments himself, which helped guide the learning. Both

teachers also offered comments, directly on the annotations and in other parts of the portfolio as well where sharing features are incorporated.

In addition to the comments that helped guide the learning, having several recordings of the Bagatelle at hand helped motivate the student to continue learning the piece within the very tight timeframe that he was given. When he became discouraged and said that he was “making no progress at all,” he was advised to listen to one of the earlier recordings and could see and hear that he had improved considerably.

The student made eight annotated recordings in total, and kept three in his iSCORE portfolio. Two of the annotated recordings, with comments, appear in the figure below. The vertical yellow marks indicate where annotations have been made, and when the recording is played back in real time, these annotations appear to the right.

The screenshot displays the iSCORE application interface. At the top, the logo for iSCORE The Royal Conservatory is visible. Below the logo is a navigation bar with tabs for Home, Work, Overview, Calendar, Sharing, Files, and Mailbox. A secondary navigation bar shows tabs for Planning, Doing, and Reflecting, with a Save button on the right. The main content area is divided into two sections. The top section, titled 'Doing', features a video player showing a student playing piano. To the right of the video player, a list of annotations is displayed, each with a timestamp and a user name. The annotations are: 0:08 H. Rasberry (Melody overpowered by middle and left hand chords), 0:22 H. Rasberry (24 hours in, still having trouble with the notes), and 0:34 H. Rasberry (well controlled entry). The bottom section, titled 'Sharing', includes a video player showing a student playing piano. To the right of the video player, a list of annotations is displayed, each with a timestamp and a user name. The annotations are: 0:07 I. Teacher (I'm not really hearing the solid 7 here), 0:13 H. Rasberry (I'm really happy with the melody here and the inner voicing), 0:26 H. Rasberry (What the heck is wrong with our piano?), 0:40 H. Rasberry (This part used to be so hard for me - now it's my favourite!), and 0:43 H. Rasberry (Whoops! Chord should have been longer). Below the sharing section, there is a 'Who Would I Like to Share With?' dropdown menu and a 'Shared with:' list showing Julia Brook and Julia Brook 2.

Figure 4. Two annotations of video recordings

The student spent most of his iSCORE time using the annotation feature and checking back to the strategies section on the planning tab. It was observed that he enlisted the strategies section when he was feeling that he wasn't making quick progress, or when his motivation to continue flagged. Remaining motivated to learn the piece was one of the most difficult aspects of the undertaking. On the evening of the first day, he considered dropping out of the class, stating, "Why am I doing this anyway? It's just so stressful." When he was assured that he could still decline to perform, he approached the task with renewed vigour.

The screenshot shows the iSCORE Reflecting interface. The top navigation bar includes Home, Work, Overview, Calendar, Sharing, Files, Mailbox, Settings, and Logout. The main content area is titled 'Reflecting' and contains a 'Self-Evaluation' section for a task titled 'Quick Study'. The self-evaluation prompt asks the user to reflect on their performance and goals. Below the prompt, there are three statements to be rated on a scale from 'never' to 'always'.

**Reflecting**  
After completing your work, it is useful to reflect on your outcome, your plan, your performance, and what lessons you can take from this experience.

**Self-Evaluation**  
How did you do? Look at the goals and criteria you set for this task. Compare the result of your efforts to your intentions and goals.

**Text**  
Please press the Save button when you are done.

Considering my main goal was to learn the piece in 48 hours and perform it, I think I met all of my goals since they all helped to achieve my overall goal.

[+ Need help? Answer these:](#)

Consider these statements. Rate how accurate they were for you and write your reflections.

I thought about what the final version of my work would look like.	never	always
I began by identifying my goals.	never	always
I was interested in what I was doing.	never	always

**Cause**  
What are the reasons for this outcome?  
Did your result match your intentions? What are the reasons for this outcome?

**Text**  
Please press the Save button when you are done.

I answered this question in my goals.

Figure 5. Reflections

On the morning of the second day, his first performance was particularly good, and he was surprised to see that it had "improved in the night." One of the lessons learned through this

process, was that leaving the piece for a few hours at a time (and sleeping!) made for better learning than continual practice for hours on end.

### Satisfaction

 How satisfied are you with your performance, overall?

least           most

### Lessons Learned

 What can you do differently next time you approach a similar task? What are the lessons you will take away from this about yourself as a learner?

#### Text

Please press the Save button when you are done.

**I learned that it's important to work for an intensive period and then take a break to sleep. I found that my piece was so much better after.**

*Figure 6. Further reflections*

Just before the performance on the morning of the third day, the student returned once more to his iSCORE portfolio to listen to the performances of the Bagatelle by other musicians. This gave him the opportunity to consider small changes in interpretation and dynamics and also assured him that he was ready for the performance. Indeed, the performance went very well; he sounded as if he had been playing the piece for months. In reviewing the post-performance interview, we were struck by his love for the music, and how much joy he experienced in performing a piece he had come to know in such a short period. In the months that have passed since the “quick study” took place, he has continued to play the Bagatelle.

When asked about the role that iSCORE played in his learning, he was able to articulate three important contributions that the portfolio made to his learning. The first was that he was able to track his use of strategies and refer to the strategy list when he needed a change in direction, something that we also observed during the practice sessions. The second was that the archived performances on the annotator provided him with the aural feedback he needed to improve the melody line and phrasing. And third, while he noted that, “I could have done all of

this using YouTube, Word, and my iPhone,” he also acknowledged that, “With iSCORE, you can keep everything all in one place.” He also made clear that the tool alone would not have given him the support he needed to learn the piece. The input from teachers as well as an impromptu performance for a group of adults late on the second day, were important, too, to the learning process.

The student also identified what he perceived to be some of the shortcomings of the tool. These included issues of sound quality on the built-in recorder, awkwardness in loading video, what he perceived to be an excessive amount of text and text boxes, and the inability to export his final work in an aesthetically satisfying form. However, the student also acknowledged that he understood iSCORE to be “for learning” and as a learning tool, iSCORE “does what it needs to do.”

### **Interpretations and Conclusions**

From the student’s self-reflections on the portfolio itself, from verbal comments, and from the direct observations made by the researchers, it became apparent that iSCORE aided this student to accomplish a challenging task. While it certainly would have been possible to learn the Tcherenpnin without the aid of iSCORE – as evidenced by the other students who learned the same piece for the quick study competition – iSCORE contributed to the process in positive ways. First, the tool helped the student remain motivated when his dedication to the challenge waned. Second, iSCORE enabled the student to critically assess his progress over the 48-hour period. By listening several times to the videotaped versions using the annotation tool, he was able to reflect on what aspects of the piece still needed work and where he was making clear improvements. Third, the annotation tool provided an archive of his progress over time. Fourth, iSCORE enabled the student to solicit feedback from the teachers when they were not physically present with him, thereby making it possible for him to ask for specific feedback during his practice sessions on a need-to-know basis. Fifth, iSCORE provided a virtual learning space that

contained all of the student's planning, creations, practising sessions, and reflections in one location. Finally, by prompting the student to enter reflections about the learning, the student made observations and connections that he might not otherwise have made. For example, one of the important things that the student learned during the 48-hour period was the importance of punctuating dedicated practice sessions with breaks. He reported that has continued to apply this principle in the time that has elapsed since the quick study took place.

Another development that has occurred in the time that has passed since the quick study exercise was undertaken is that the student has learned several new pieces of repertoire, among them another Tcherepnin Ballade from Opus 5. He has not, however, used iSCORE to help learn the new repertoire, at least not directly. iSCORE was an important tool for this student, an advanced musician, in approaching a new and particularly challenging task. But it is not a tool that he employs for regular practising where he has developed effective strategies that do not include the use of iSCORE. That said, the lessons learned through the quick study experience, including the use of particular strategies he learned in the process, are ones that he has continued to apply to new repertoire. In addition, after the quick study experience, he has made more use of other performances, comparing interpretations of other musicians in making his own musical choices.

Findings from this research also underscore the important role that transactional regulation, involving both self-regulated learning and regulation by plays in studio music instruction. At the time of the quick study competition, this student was highly motivated and already quite self-regulated as a musician. However, he also relied on the interactions between himself, the two available teachers, and the support of other musicians who served as audience in the process. Students develop self-regulation through the structured and purposeful support of their teachers; that is, teachers who themselves model self-regulatory behaviours to facilitate

student agency. Finally, this case study highlights the importance of having learning tools that support planning and that provide ways of reflecting on sound, through sound.

### Acknowledgements

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## **Hawaii International Conference on Education Presentation Proposal**

**Title:** Using Literature Circles at the College Level to Teach about Diversity and Multicultural Education

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### **Abstract:**

Literature circles give students the opportunity to learn about a given issue or subject area in greater depth than what can be achieved through textbooks or lecture alone. As part of the literature circle activities, pre-service teachers are encouraged to take the information they are learning and relate it back to their own lives and to the world around them. Students are exposed to different perspectives on current topics related to diversity and multicultural education. Aside from learning about how to set up literature circles, participants will also be given a list of books to use that deal with social issues and problems that we are currently facing in our society.

In literature circles, small groups of students gather together to discuss a piece of literature in depth. The discussion is guided by students' response to what they have read (Daniels, 2002).

The use of literature circles is a common instructional method used in the K-12 setting (Daniels, 2002; Haydon, 2003). However, there is little about using literature circles as an instructional method in the college classroom, let alone as a method for teaching about diversity and multicultural education. Research-based theories of literacy education provide the foundation of literature circles (Daniels, 1994; Raphael et al. 2004; Raphael & McMahon, 1994). Researchers have found that the discussions that take place during literature circle activities are often purposeful and critically minded and provide students with a dynamic learning opportunity above and beyond textbooks and lecture (Latendresse, 2004; Long & Gove, 2003; Sandmann & Gruhler, 2007; Wilfong, 2009). Students who feel uncomfortable expressing themselves in a large group, often feel more empowered to speak out about personal experiences and opinions in a small group setting (Johnson, 2000; Sandmann & Gruhler, 2007; Wolfing, 2009). In depth discussion and the sharing of thoughts, feelings and beliefs is a critical component to learning about diversity and becoming a culturally responsive teacher (Gollnick & Chinn, 2013).

1) **Title:** Strategies for the sharing of content in the digital environment of Higher Education

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6) **Abstract::** This paper presentation reveals my experience with web development at various levels within my institution since the mid-90s. This era was a progressive time for web development. Most institutions of higher education were just beginning to launch web presences for delivery of content. The design to 1024X768 browser display approach to content delivery as the initial benchmark has changed radically since the early desk top environment. The ubiquitous mobile devices and their exponential growth in use, variety and versatility are proving to be the seemingly ever evolving environment for content delivery for the foreseeable future. However, mobile devices have not necessarily simplified the process of decision making and implantation involved in web development. Rather, mobile devices complicate the issues regarding delivery of content to users as the variety of digital receptacles throughout the campus and community today has increased. A one size fits all solution is not necessarily the best approach for web development where content and experience rule and dictate success. Well-informed choices will create positive experiences, satisfy expectations, and build community for the user. In this paper presentation, I will discuss lessons learned, best practices, and recommendations for making intelligent decisions for development and implementation as well as the place for analytics, usability, and marketing for the successful deployment of web content for your institution.

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### Abstract

Jacques Maritain once stated, "...the painter is not the art of painting, nor is he merely a painter. He is also a man, and he is a man before being a painter." (The Responsibility of the Artist) This perspective of always regarding the artist as a holistic, concrete, unitary, and particular man, a perspective inherited from Aristotle and Aquinas, permeates Maritain's theory of artistic creation. In art education, we are confronted by the student, a holistic, unitary, and particular man or subject, who is in the process of making a work.

In this paper, based on Maritain's description of the artist's creation, we will construct a structural model to illustrate the process of creative activity. Through this structure, we will be able to see that in this creative process, the creator is involved as a holistic person, who brings all his powers (such as senses, imagination, memory, intellect and will) into harmony. From this point of view, we can claim that art education is not an education which merely instructs people how to create artworks; in fact, it is also an education which helps people to work holistically, or, more precisely, to dedicate oneself to a human activity as a whole. Art education, then, is not just professional training of the artist, but also the very formation of a holistic human being. Free from the constraints of a mere professional education, art education creates dialogue with other disciplines, such as the education of life, moral education, and other fields of study. In Chinese traditional philosophy, such as Confucianism, the training of the artist and his self-cultivation are integrated in every case. This position also supports our understanding of art education.

Research objectives: We will explore the values of art education itself from the process of artistic creativity, and reveal possible relations between art education and other disciplines.

Methodology: This paper, based on Maritain's philosophy of art, will construct a

structural model of artistic activity. Through this structure we are able to illustrate the artist's operations in creation and his self-progression and cultivation as a holistic human being. Chinese philosophy of art will also be introduced in this context to help expound this formation process.

Expected outcomes: This paper will provide a foundation to reflect upon art education more broadly and reveal the aspect of the artistic subject as a holistic human being in creation. This perspective will help teachers elevate art education from mere professional training to a training of the holistic man, who himself is the intercross of life, morality, and culture.

## Philosophical Reflections on Art Education: From the Perspective of Jacques Maritain's Philosophy of Art

### 1. Introduction<sup>1</sup>

Jacques Maritain once stated, "...the painter is not the art of painting, nor is he merely a painter. He is also a man, and he is a man before being a painter."<sup>2</sup> This perspective of always regarding the artist as a holistic, concrete, unitary, and particular man, a perspective inherited from Aristotle and Aquinas, permeates Maritain's theory of artistic creation.

This paper, based on Maritain's philosophy of art, will create a structural model of artistic activity. Through this model we are able to illustrate the artist's creative operations in which the artist engages himself into an activity as a holistic human being. Chinese philosophy of art, illustrated by Confucius, will also be introduced in this context to help expound this formation process.

We will first analyze Maritain's theory of artistic creation, and then build a structural model to illustrate the creative process of the artist. Following this structure, we will elucidate Confucius' viewpoint on music and self-cultivation to support our conclusion, resulted from our analysis of Maritain's theory, that art education is not the mere training of making an artwork, but is also the vary formation of a holistic human being.

### 2. Maritain's theory of artistic creation

Following Thomas Aquinas (1225-1274), Jacques Maritain claims that in our

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<sup>1</sup> This research is sponsored by the National Science Council, Taiwan.

<sup>2</sup> Jacques Maritain, *The Responsibility of the Artist* (New York: Charles Scribner's Sons, 1960), p. 29.

intellect there are the speculative and practical orders. “There are in the intellect virtues whose *sole end* is to know. They belong to the speculative order.”<sup>3</sup> And, “The *practical* order is opposed to the speculative order because there man tends to something other than knowledge only. If he knows, it is no longer to rest in the truth, and to enjoy it (*frui*); it is to use (*uti*) his knowledge, with a view to some work or some action.”<sup>4</sup>

Since it is turned towards action, and not towards the pure interiority of knowledge, art “belongs to the practical order.”<sup>5</sup> In the practical order, there exist two different spheres: “... the practical order itself is divided into two entirely distinct spheres, which the ancients called the sphere of Doing (*agibile, prakton*) and the sphere of Making (*factibile, poiêton*).”<sup>6</sup> The sphere of Doing is that of morality, while the sphere of Making is that of art. Maritain says, “The sphere of Making is the sphere of Art, in the most universal sense of this word. Art, which rules Making and not Doing, stands therefore outside the human sphere; it has an end, rules, values, which are not those of man, but those of the work to be produced. This work is everything for Art; there is for Art but one law—the exigencies and the good of the work.”<sup>7</sup>

Accordingly, the artist should be concerned only for the good of his work, and he can achieve it only by properly using his virtues of art, which is an “infallible” *habitus*, and finds its root in man’s powers of soul.<sup>8</sup>

In *Art and Scholasticism and the Frontiers of Poetry*, Maritain’s early work concerning Art, virtues of art in the artist play the most important role in artistic activities. When it comes to the fine arts, which is beyond the realm of the useful, a higher intellectuality of art is then found in Maritain’s most famous work, *Creative Intuition in Art and Poetry*:

This creativity of the spirit is the first ontological root of the artistic activity. And in fine arts it is pure, cleared of all adventitious elements. And the pure creativity of spiritual intelligence tends to achieve something in which spiritual intelligence finds its own delight, that is, to produce an object of beauty...the intellect strives to engender in beauty.

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<sup>3</sup> Jacques Maritain, *Art and Scholasticism and the Frontiers of Poetry*, Trans. by Joseph W. Evans (New York: Charles Scribner’s Sons, 1962), p. 5.

<sup>4</sup> *Art and Scholasticism and the Frontiers of Poetry*, p. 6.

<sup>5</sup> *Art and Scholasticism and the Frontiers of Poetry*, p. 6.

<sup>6</sup> *Art and Scholasticism and the Frontiers of Poetry*, p. 7.

<sup>7</sup> *Art and Scholasticism and the Frontiers of Poetry*, pp. 8-9.

<sup>8</sup> Maritain says, “Art resides in the soul and is the certain perfection of the soul. It is what Aristotle called ἐξῆς, in Latin a *habitus*, an inner quality or stable and deep-rooted disposition that raises the human subject and his natural power to a higher degree of vital formation and energy...” See Jacques Maritain, *Creative Intuition in Art and Poetry* (New Jersey: Princeton University Press, 1953), p. 48.

Such is, in its longing for beauty, that pure creativity of spirit, to the release of which the appetite basically tends, together with the intellect, in the vital dynamism of the fine arts.

...For beauty, which is of no use, is radiant with intelligence and is as transcendental and infinite as the universe of the intellect. Thus the very end—transcendent end—intended pertains to the realm of the intellect, of its exultation and joy, not to the world of utility, and the intellectuality of art is in the fine arts (though more bound there with the sensitive and emotional power) at a much higher degree than in the arts of the craftsman. The need of the intellect to manifest externally what is grasped with itself, in creative intuition, and to manifest it in beauty, is simply the essential thing in the fine arts.<sup>9</sup>

According to Maritain, free from a useful end, intellect, actuated by the pure creativity of spirit which is longing for beauty, strives to engender in beauty. To produce an object of beauty, the intellect in the creative intuition receives something, which is what Maritain calls “poetic knowledge” and which is also what should be manifested externally in a work. In the fine arts, the creative intuition becomes therefore the primary rule, to which the virtues of art of the artist, different from a craftsman’s arts, “must first of all be loyal.”<sup>10</sup>

From what is stated above, we can conclude that for Maritain the creative process of the artist in the fine arts involves both his will and his intellect: it is the pure creativity of spirit, to the release of which the appetite or will basically tends, that actuates the intellect to engender in beauty. But this creative process of the artist remains unclear, since we all know that in producing a work the artist’s intellect does not work alone. For this reason, we shall return to Maritain’s discourses on the creative intuition and how it works in this creative process.

According to Maritain, “His[the Artist’s] intuition, the creative intuition, is an obscure grasping of his own Self and of things in a knowledge through union or through connaturality which is born in the spiritual unconscious, and which fructifies only in the work.”<sup>11</sup> In this statement we discovered two key words: one is the spiritual unconscious; and the other is connaturality. The spiritual unconscious or preconscious is conceived by Maritain as a “a spiritual milieu—a kind of fluid and moving world, activated by the diffuse light of the Illuminating Intellect, and seemingly asleep but secretly tense and vigilant—which is this preconscious life of intellect, and of imagination and of emotion, empty of any actual concept of idea,

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<sup>9</sup> Jacques Maritain, *Creative Intuition in Art and Poetry* (New Jersey: Princeton University Press, 1953), pp. 55-56.

<sup>10</sup> *Creative Intuition in Art and Poetry*, p. 59.

<sup>11</sup> *Creative Intuition in Art and Poetry*, p. 115.

but full of images and full of emotional movements, and in which all the past experiences and treasures of memory acquired by the soul are present in state of virtuality. It is within this fluid and moving milieu that poetic experience and poetic intuition [creative intuition] exist, not virtually, but as an act or actuation definitely formed.”<sup>12</sup> It is obvious to see that the spiritual unconscious has its kinship with the idea of “pre-reflective consciousness” (la conscience non-réflexive) in phenomenology, which indicates a status or primordial consciousness of a subject before any reflection and concept formed in him while he and the object encounter one another.<sup>13</sup> It is exactly in this spiritual milieu, spiritual unconsciousness, where senses, intellect, imagination, emotion, and memory all together come into an organic and harmonious interplay. The artist’s entire being and all that constitutes him, if I may say that, with all his powers, are involved in his creative process.

The spiritual unconscious or preconscious is a milieu which allows all of the subject’s powers to together work, namely, which allows the creative intuition to take place, but it remains a question of how these powers could work together as they are in harmony and how “an obscure grasping of his own Self (the artist) and of things” could be possibly obtained by the creative intuition. Maritain says that it is “through union or through connaturality.” “Connaturality” is a concept from Thomas Aquinas which refers to a connatural knowledge gained by one’s being connatural to the matter he judges in terms of a moral judgment, and this knowledge as well is used later on by Aquinas in terms of one’s knowledge of sacred doctrine.<sup>14</sup> In other discourses of Aquinas, he also refers to this connatural knowledge as an affective or experimental knowledge.<sup>15</sup> By adopting the idea of “connaturality” into his artistic creation theory, Maritain illustrates how man’s powers operate together in the creative intuition: by being connatural or inclining to the object, the artist in his spiritual preconscious, where the preconscious life of his senses, imagination, and intellect permeate one another, grasps a kind of knowledge from a union between his self and the object by means of emotion. He says,

It [emotion] suffices for emotion disposing or inclining, as I have said, the entire soul in a certain determinate manner to be thus received in the undetermined vitality

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<sup>12</sup> *Creative Intuition in Art and Poetry*, p. 301.

<sup>13</sup> Jean-Paul Sartre, *L’être et le néant* (Paris: Editions Gallimard, 2004), p.19.

<sup>14</sup> Thomas Aquinas, *Summa Theologica*, II-II, 45, 2. The English translation by Fathers of the Dominican Province is adopted in this paper: “. . .wisdom denotes a certain rectitude of judgment according to the Eternal Law. Now rectitude of judgment is twofold: first, on account of perfect use of reason, secondly, on account of a certain connaturality with the matter about which one has to judge. Thus, about matters of chastity, a man after inquiring with his reason forms a right judgment, if he has learnt the science of morals, while he who has the habit of chastity judges of such matters by a kind of connaturality.”

<sup>15</sup> Thomas Aquinas, *Summa Theologica*, II-II, 97, 2.

and productivity of the spirit, where it is permeated by the light Illuminating Intellect: then, while remaining emotion, it is made—with respect to the aspects in things which are connatural to, or *like*, the soul it imbues—into an instrument of intelligence judging through connaturality, and plays, in the process of knowledge through *likeness* between reality and subjectivity, the part of nonconceptual intrinsic determination of intelligence in its preconscious activity.<sup>16</sup>

In this way, the emotion serves as an instrument which conveys the aspects in things connatural towards the soul to the intellect. The obscure grasping of the kind of knowledge presented as nonconceptual knowledge of inseparable Self and things—poetic knowledge—is finally received by the intellect through the inclining and disposing emotion. Why is the intellect the receiver? Maritain said, “I am speaking of a certain kind of knowledge, and emotion does not know: the intellect knows, in this kind of knowledge as in any other.”<sup>17</sup>

This is the process how the creative intuition grasps the “poetic knowledge,” an obscure yet precious knowledge of a union between the subject and the object, for which the artist aims in order to realize it in his works.

In the following section, we will illustrate in a structural model the process of artistic creation proposed by Maritain in order to more clearly manifest the holistic character of this human activity.

### 3. A structural model of artistic creation and its meaning

When Aquinas discusses the human being, he describes him within a general metaphysical account of human nature. Maritain does the same. Maritain’s theory of artistic creation is rooted in his Thomistic understanding of human nature.

Since art pertains to the practical order, it is concerned first and foremost with the appetite, and for the same reason, it is also concerned with the object created. It is in his longing for beauty and the desire to engender in beauty, that the artist unfolds his creativity. Maritain therefore says, “No wall of separation isolates the virtue of art from the inner universe of man’s desire and love. There exists, to be sure, a special desire and love which is simply one with the activity of the artist, consubstantial with this activity. That is the desire and love to create a work.”<sup>18</sup> From this viewpoint, it is then not surprising that in his theory of the creative intuition, Maritain adopts the concept of “Connatural knowledge” from Aquinas, which, as a kind of knowledge, in one way involves the working of one’s intellect and in the other

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<sup>16</sup> *Creative Intuition in Art and Poetry*, pp. 122-123.

<sup>17</sup> *Creative Intuition in Art and Poetry*, p. 119.

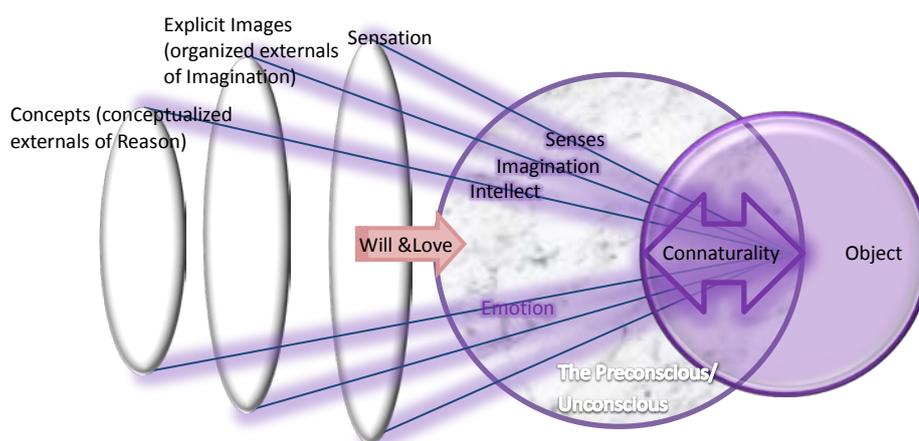
<sup>18</sup> Jacques Maritain, *The Responsibility of the Artist* (New York: Charles Scribner’s Sons, 1960), p. 50.

involves the effects of one's will. Hence, in grasping the poetic knowledge by the creative intuition, "the intellect is at play not alone, but together with affective inclinations and dispositions of the will, and as guided and shaped by them."<sup>19</sup>

The spiritual unconscious or preconscious is essential to Maritain's theory, since it is only in the spiritual unconscious or preconscious, that the artist could possibly bring his will and powers together. The spiritual unconscious or preconscious engages the artist with his whole being into that vital point in which he primordially encounters the object in all its abundance, a point that precedes his separation from the object and the concept of it. The spiritual unconscious or preconscious is not a milieu where the object presents itself meaninglessly or chaotically, but conversely, it is a milieu where the artist's soul, as all that he is, suffers the reality (object): the creative intuition is "born in the depths of the soul."<sup>20</sup> So to speak, the spiritual unconscious or preconscious is "near the center of the soul" and is "the living springs of the preconceptual or supraconceptual vitality of the spirit."<sup>21</sup>

All the powers of the artist, including intellect, imagination, and senses, are together actuated in the creative intuition. They work harmoniously while the emotion permeates them all as they permeate it. The emotion is not one of these powers yet related to each one of them. It thus perfectly serves as an essential instrument through which certain aspects in the object, that the soul suffers and is connatural to, is conveyed to the intellect. As Caldera puts it: judgment by inclination (connaturality) is "an intuitive judgment of the value of an object, posited by means of the affective reation of the subject in relation to it."<sup>22</sup>

Now we will endeavor to illustrate the creative process of the artist through a remodeled figure from Maritain's own drawing:<sup>23</sup>



<sup>19</sup> *Creative Intuition in Art and Poetry*, p. 117.

<sup>20</sup> *Creative Intuition in Art and Poetry*, p. 77.

<sup>21</sup> *Creative Intuition in Art and Poetry*, p. 235.

<sup>22</sup> See Kevin E. O'Reilly, *Aesthetic Perception: A Thomistic Perspective* (Dublin: Four Courts Press, 2007), p.62.

<sup>23</sup> See Maritain's own figure in *Creative Intuition in Art and Poetry*, p. 108.

## Illustration:

In this figure, the powers of senses, imagination and intellect all fall into the preconscious area (shown in a marble background). This structure is modified on the basis of Maritain's own sketch. In Maritain's sketch he depicts the outermost level as the intellect and the innermost level as the senses. In our model, however, this order is reversed, since the first level encountering the object, in any case, is the senses. In addition, the emotion is not expressed in Maritain's drawing, although the emotion is the most important instrument in his theory. In this figure we use the halo effect to mark the work of emotion, which is extremely important yet has no particular corresponding physical faculty. The emotion permeates the senses, imagination, and intellect as they permeate it. Through the emotional connaturality with the aesthetic object, a kind of knowledge in regard with one aspect of the object together with the subject's self is conveyed through the emotion and finally grasped by the intellect. In this figure we use the "halo" and "double-headed" arrow to express the openness in the process of an emotional connaturality between the two (the subject and the object).<sup>24</sup>

Through this structure, we are able to see that in this creative process, the creator is involved as a holistic person, who brings together, with his past experiences and treasures of memory in virtuality, all his powers (such as senses, imagination, memory, intellect and will) into harmony in his inclining will towards the object and in his love for beauty or engendering in beauty.

Once the obscure knowledge from the union between the creator's deep self and the thing, namely, the poetic knowledge, is grasped, the artist then endeavors to realize it in the artwork. Now his mission is to bring something into its being, something that has never existed before him. He uses all the skills he has learned to complete this mission. He practices under the instruction of his virtues of art and he concerns himself with only the good of his work. It is a hard task. "A sort of conflict may therefore be observed between the transcendence of beauty and the material narrowness of the work to be made, between, on the one hand, the formal *ratio* of beauty, the splendor of being and of all the transcendentals combined, and, on the other hand, the formal *ratio* of art, undeviating ingenuity in the realm of

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<sup>24</sup> This structural model was first formed in "On Aesthetic Experience in Thomas Aquinas," *World Philosophy* 5 (2013): 45. The figure in this paper was revised again from the figure in *World Philosophy*, since in the figure of *World Philosophy* the subject and the object were depicted separately, and in this figure I overlapped the two to show their union when the creative intuition is actuated to grasp the meaning of the object in the spiritual preconscious.

works-to-be-made.”<sup>25</sup> It is not at all surprising that art education emphasizes so many of the skills, the techniques and the cleverness of the artist’s hands, without which the work can never be made in the way it should be, or precisely, in the way the artist wants it to be.

Maritain also emphasizes the need for skills and techniques, yet he puts more weight on the living *habitus*, or *ratio* of art, related to these skills. He therefore condemns ossified academic teaching, claiming accordingly, “the manner in which education cultivates the natural dispositions may atrophy the spontaneous gift instead of developing the *habitus*, especially if this manner is material and rotten with recipes and clever devices—or again if it is theoretical and speculative instead of being operative, for the practical intellect, on which the rules of the arts depend, proceed by positing an effect in being, not by proving or demonstrating; and often those who best possess the rules of an art are the least capable of formulating them. From this point of view one must deplore the substitution (begun by Colbert, completed by the Revolution) of the academic teaching of the schools for corporate apprenticeship.”<sup>26</sup>

When all is said and done, art education remains absolutely necessary. Key to this is forever keeping the kinship and vivid dynamism between the living *habitus* and techniques. “In all teaching the master only assists from the outside the principle of immanent activity which is within the pupil.”<sup>27</sup> Even with the assistance of the master, the pupil needs to cultivate his own *habitus* by himself and in himself.

In the fine arts, art *habitus* elevates itself upwards to the highest level of intellectuality when it works towards realizing in the work the poetic knowledge gasped by the creative intuition. From this point of view, if we may say something further that Maritain did not say, art education is not an education which merely instructs people how to create artworks; in fact, it is also an education which helps the artist to work holistically, or, more precisely, to dedicate oneself to a human activity as a whole, since the grasping of the poetic knowledge requires all his powers working in harmony (including intellect, imagination, and senses) and an openness with all that he is to the object. Art education, then, is not just professional training of the artist, but also the very formation of a holistic human being.

Creation, for Maritain, is a real living human activity. The artwork, as the fruit of this activity, is a most sweet taste which necessarily conveys both the depth of the artist’s self with all his substance and the secret of the object revealed to him. No fixed standards should constrain this activity, which involves a living person

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<sup>25</sup> Jacques Maritain, *Art and Scholasticism and the Frontiers of Poetry*, Trans. by Joseph W. Evans (New York: Charles Scribner’s Sons, 1962), p. 44.

<sup>26</sup> *Art and Scholasticism and the Frontiers of Poetry*, p. 41.

<sup>27</sup> *Art and Scholasticism and the Frontiers of Poetry*, p. 43.

dedicating all his being and powers and the living relationship that he has with the world. *Habitus*, basing its operation on this living person, is free from any constraint of the academic teaching of art.

If what Maritain describes about artistic creation is true, art education then will be an education which cultivates the artist to work as a holistic human being with all his powers and being engaged, and at the same time cultivates a positive intimacy, gained only through the activity of creation, that he can have with the world. In other words, every creative process the artist experiences is a process that deepens himself as a living and complete human being, and is also a process that deepens his insight of the world that he brings into light. In regard to this incredible abundance of the creative process, art education thus “can be” and “should be” regarded as an education more than professional or technical training of the artist to make a work. It should be regarded as a cultivation of the holistic human being and also a cultivation of a decent person who sincerely opens himself to the world with all that he is. In this way, free from the constraints of a mere professional education or art technique education, art education creates dialogue with other disciplines, such as education of life, moral education, and other fields of study.

In this paper, we reveal the meaning of art education and its links to moral education and education of life through our analysis of Maritain’s model of artistic creativity. It would be interesting to see a different approach in which moral education and art education are from the beginning considered as one, an approach that was adopted by Confucius. Confucius’ discourses may not be enough for us to form a model of artistic creation, yet his insights on the link between moral education and art education perfectly echo the claim that we have made in this paper.

#### 4. A Chinese approach illustrated by Confucius

According to Confucius, the training of the artist and his self-cultivation are integrated in every case. A story on Confucius clearly demonstrates this standpoint:

Confucius learned to play lute under the instruction of Shi Xiang (師襄). He had practiced one piece for ten days and could not complete it. Shi Xiang said: “You may move on to the next piece.” Confucius replied: “I have acknowledged the tune, but am not yet familiar with the playing technique.” After a period of time, Shi Xiang said: “You have learned the technique, and now you may move on to the next piece.” To which Confucius replied: “I have yet to acknowledge its emotional implication.” After a period of time, Shi Xiang said: “You have learned the emotional implication, and now you may

move on.” Confucius replied: “I have yet to acknowledge the person in this piece.” One day, after a period of time, Confucius was in quiet and pleasant contemplation and seemed to look to the horizon filled with great aspiration. He said: “I have recognized this person. He is black, he is tall, and his vision is high and far. It seems that he is ruling all the lords of lands. If he is not King Wen (文王), who else could have composed this!?”<sup>28</sup>

“The ‘tune’ and ‘technique’ of the piece designate skill. The ‘emotional implication’ means the spirit of the music, and the ‘person’ is the presence in the music of some spiritual world of a real subject. The process of learning for Confucius is to start from skill and move on to the spiritual world which is itself beyond skill, and from there to reach the person who is possessed of this world. This shows us the active process of a great artist. To grasp the ‘person’ in the music is to fuse, for Confucius, himself to the music and to make his whole personality permeate in music.”<sup>29</sup> It is obvious for us to observe that for Confucius the deep experience of music and the cultivation of his personality is in fact one thing.<sup>30</sup>

In *The Analects*, Confucius said, “Get aroused by the Odes; acquire a firm standing through ritual; complete the process with music.” (*The Analects*, Book VIII)<sup>31</sup> Music therefore is the last step to achieve the highest level of life. Confucius’ education for his students is often addressed to their moral integrity and their self-cultivation as moral beings in the society. Interestingly enough, he designates music, or an artistic accomplishment precisely speaking, as the ultimate end of the process of this self-cultivation. Without experiencing the integration of a musical cultivation and self-upbringing, or without seeing the connection between the two at the highest level of his spiritual life, he would not have so firmly made this statement.

Another paragraph in *The Analects* says, “Ritual! Ritual! they said. But is it just a matter of jades and silks? Music! Music! they said. But is it just a matter of bells and drums?” (*The Analects*, Book XVII) If music is something more than music, then what is that something extra beyond the bells and drums? As the story in *Records of the Historian* shows us, one is able to capture the “person” in music only when his spiritual level reaches the same height of this “person” in music. This spiritual status

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<sup>28</sup> Si Ma Qian/司馬遷, *Records of the Historian*, Hong Kong: The Commercial Press, 1974, pp. 13-14. This passage is translated by the writer.

<sup>29</sup> Xu Fuguan, *The Spirit of Chinese Art*, Taipei: Taiwan Student Book, 1974, p. 6.

<sup>30</sup> This paragraph and the paragraph above are cited from Katia Lenahan, “Beauty and Goodness: A Comparison between the Aesthetic Theories of Jacques Maritain and Confucius,” *International Journal of Philosophy* (2010): 65-66.

<sup>31</sup> The translation of *The Analects* in this paper is based on Burton Watson’s work. See Confucius, *The Analects of Confucius* (New York: Columbia University Press, 2007). There are some words and sentences modified by the writer.

of the artist or the performer refers to in one way his moral status and self-cultivation, and in the other his artistic taste. One's higher moral status is contributed to his understanding of the music, as is one's higher artistic taste is contributed to his moral status. These two do not exclude one another, but rather, they may grow together and facilitate one another. Confucius thus said, "A human being who lacks benevolence (humaneness)—what is ritual to someone like that? A human being who lacks benevolence—what is music to someone like that?" (*The Analects*, Book III) Music is something more than the bells and drums, since the spiritual world which it implies is too rich and sublime to be regarded as mere external sounds, and this spiritual world, as we have seen, is not something irrelevant to one's moral integrity and self-cultivation. The undeniable kinship between art and morality, or between art education and moral education, is revealed in both Confucius' personal life and his philosophy.

## 5. Conclusion

Confucius' discourses well support our understanding of art education, which is an expanded point that we gained from the analysis of Maritain's theory of artistic creation: art education is not only training of a person to produce a work, but is also an education which helps this person to work holistically as a human being, deepens his insight into things, and cultivates his positive intimacy with the world. This kind of education is thus related to the education of life and moral education, and becomes a discipline which is open to and is able to create a real dialogue with other disciplines.

Yet one thing is worth noting: the link between art education and moral education or education of life does not result in the illusion that art education, moral education or education of life is not able to develop as it is without one another. It is more than obvious that each discipline has its own rule and specialty which other disciplines are not able to replace. Our aim is only to draw out the fact that we are confronted in art education by the student, a holistic, unitary, and particular man or subject, who is in the process of making. He is at the same time a moral being, an artistic being, and a being endeavoring to reach a higher status of spirituality and a deeper understanding of the world. Accordingly, the link and the possible dialogues between art education and moral education or education of life shall not always be left aside if we are on the way to conceive of an art education which is more perfect, more complete, and much closer to the students in their real situation.

Title:

Pre-Service Teachers' Mental Models of Electricity and Magnetism

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### **ABSTRACT**

This study investigated the mental models on electricity and magnetism of pre-service teachers with specialization in physics at a government education university. The respondents consisted of 174 students divided into two groups: No E&M and With E&M. The No E&M group are the students who have not taken any college electricity and magnetism (E&M) course while the With E&M group are the students who have taken at least one college E&M course. The instrument used is the Conceptual Survey on Electricity and Magnetism (CSEM), a 32-item multiple-choice standardized test, and it consisted of 11 conceptual areas in E&M. The statistical treatments used for the data were factor analysis and model analysis. Factor analysis was used to determine the common conceptions of students in E&M while model analysis was used to determine the mental models employed by students when answering E&M problems. The mental models of the students were categorized as expert, student and null model. The expert model is the mental model that is accepted by the scientific community to be correct. The student model is an incorrect or partially correct mental model that students created based on experience or previous instruction. The null model is a mental model that is not describable by a well-understood mental model. The student model was based on the most common conceptions used by students in E&M.

Using the model analysis, both groups showed that the respondents consistently made use of the student model in 5 out of 11 conceptual areas of the

CSEM. These conceptual areas are the following: 5) work, electric potential, field and force, 6) induced charge and electric field, 7) magnetic force, 8) magnetic field caused by a current, and 10) Faraday's law. However, both groups possessed mixed model for the conceptual areas of Coulomb's force law and Newton's third law.

Factor analysis was also used in this study, where 14 factors were obtained. These 14 factors have explained 64.5% of the total variance and only about 35.43% is attributed to other variables. This was different from the 11 topics that were presented by Maloney et al. Each factor represents a robust conception for both groups in electricity and magnetism, which was derived from the correlation between the factors and the items of CSEM.

To further probe the conceptions of students, an interview was done on high performing and low performing students. The answers of both the high performing and low performing students during the interview showed that they have the same conceptions on E&M. The high performing students showed that there was little change in their conceptions even if they have already studied college E&M.

The results from the three methods used: model analysis, factor analysis and interviews, corroborated with each other.

**A Study on Constructing a Meta-evaluation Checklist for a System  
Assessing Student Learning Outcomes at Universities in Taiwan**

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# **A Study on Constructing a Meta-evaluation Checklist for a System Assessing Student Learning Outcomes at Universities in Taiwan**

## **Abstract**

The main purpose of this study is to develop a meta-evaluation checklist for a system that assesses student learning outcomes at colleges and universities in Taiwan. The checklist is based on *The Student Evaluation Standards: How to Improve Evaluations of Students (SES)*. The findings and conclusions of this study may serve as a reference for higher education institutions when designing, implementing and evaluating systems for assessing student learning outcomes at their institutions. The three-stage Delphi technique is utilized to achieve the above mentioned goals. The main conclusions of this study are summarized as follows:

1. The proposed meta-evaluation checklist for a system assessing student learning outcomes is suitable for colleges and universities in Taiwan.
2. Four kinds of standards and 28 sub-standards are all applicable to the system for assessing student learning outcomes at colleges and universities in Taiwan.
3. The meta-evaluation checklist of the system for assessing student learning outcomes developed here is complete and sound for colleges and universities in Taiwan. The contents of this meta-evaluation checklist include a cover page, table of contents, and the checklist itself. The structure of the checklist includes: standards/sub-standards, checkpoints, a data collection method and results. In total, there are four kinds of standards, 28 sub-standards, and 45 checkpoints on the checklist.

Based on the conclusions of this study, suggestions are provided for colleges and universities, as well as for further studies.

**Key Words:** student learning outcomes assessment system, student evaluation system, meta-evaluation checklist, colleges and universities

## I. Introduction

Over the last few decades, higher education in Taiwan has grown at an overwhelming rate. The number of undergraduate and graduate students and the number of schools has increased many fold (Low, 2007). In 1949, only 1 university and 3 junior colleges existed in Taiwan. Over 60 years, the number of higher education institutions (HEIs) had grown to 163, including 147 universities/colleges and 16 junior colleges (Yao & Jacob, 2012).

The growth of the numbers of HEIs has caused high opportunities and easy access for students to study in colleges and universities. Therefore, HEIs' student learning outcomes are rapidly taking center stage as the principal gauge of the effectiveness of higher education. Parents and the public—acting as “consumers” of higher education—are looking not just at price, but at the underlying quality of a college credential and what it will buy them in the employment marketplace. The public is concerned about what and how much students are learning in Taiwan's colleges and universities. Therefore, organizations assessing student learning outcomes must become more aggressive and creative in requiring effective student learning outcomes as an integral part of their standards and processes (Ewell, 2001).

It is very important to assure the quality of teaching and student learning outcomes. The Taiwan Ministry of Education launched evaluation programs to evaluate the indicators of student learning outcomes for higher education in 2009. Many colleges and universities have tried to establish systems to assess student learning outcomes and assure the quality of teaching and student learning outcomes. However, what are the actual situations behind the design, planning and implementation of assessments for student learning outcomes? Are the systems for assessing student learning outcomes solid? Can the expected functions be realized? Are the processes taking place within proposal units and executive units equitable, fair and objective?

The standards for program, personnel and student evaluation were defined by the Joint Committee on Standards for Educational Evaluation (JCSEE) (JCSEE, 1981; 1994; Stufflebeam, 1999). Based on these three books, *the “Program Evaluations Metaevaluation Checklist”*, *“Personnel Evaluation Standards Metaevaluation Checklists”* and *“Personnel Evaluation Systems Standards Metaevaluation Checklists”*, they were later developed (JCSEE,

1981, 1984, 1988; 1994; Stufflebeam, 2000a, 2000b). These checklists are effective tools for evaluating the original evaluations. Metaevaluations allow public, professional, and institutional organizations to assure that evaluations provide sound findings and conclusions. They also gauge whether or not evaluation practices continue to improve and reveal whether or not institutions administer efficient, effective evaluation systems (Scriven, 2000; Stufflebeam, 2001). Suitable checklists for evaluating student evaluations have yet to be developed. Therefore, it is necessary and urgent to develop related checklists.

The main purpose of this study is to develop a meta-evaluation checklist for a student learning outcomes assessment system in Taiwan's universities from the viewpoint of meta-evaluation. The dimensions, standards and checkpoints of a meta-evaluation checklist for assessing student learning outcomes are included. The proposed checklist is expected to serve as a guide for the improvement of planning/designing/implementing of student evaluations and to be used as reference in reporting/utilizing the results of student evaluations. Finally, suggestions are offered to the colleges and universities in Taiwan.

## **II. Basic Concepts for a Meta-evaluation Checklist for a System Assessing Student Learning Outcomes in Colleges and Universities**

The meta-evaluation checklist for a system assessing student learning outcomes is viewed as important as HEIs strive to achieve the effectiveness (JCSEE, 2003). The meta-evaluation checklist for the system assessing student learning outcomes covers six concepts, including student evaluation, student learning outcomes assessment, system of assessment for student learning outcomes, meta-evaluation, meta-evaluation standards and a meta-evaluation checklist. These concepts are described as follows:

### **1. Student Evaluation**

Student evaluation can be interpreted as a process of systematically collecting and interpreting information that can be used as follows: (1) To inform students, and their parents/guardians where applicable, about the progress they are making toward attaining the knowledge, skills, attitudes, and behaviors to be learned or acquired. (2) To inform the various personnel who make educational decisions (instructional, diagnostic, placement, promotion and graduation) about students (JCSEE, 2003).

## 2. Student Learning Outcomes Assessment

Student learning outcomes assessment is the process of collecting information that tells an organization whether the services, activities, or experiences it offers are having the desired impact on those who partake in them (Rebecca, Ken & Samantha, 2009).

## 3. System Assessing Student Learning Outcomes

A student assessment system supports a variety of information needs, such as informing learning and instruction, determining progress, measuring achievement, and providing partial accountability information. All of these purposes, and the decisions based on them, should ultimately lead to improved quality and learning levels in the education system.

A student assessment system is a group of policies, structures, practices, and tools for generating and using information related to student learning and achievement. Effective assessment systems provide information of sufficient quality and quantity to meet stakeholder information and decision making needs in support of improved education quality and student learning outcomes (Ravela et al., 2009).

## 4. Meta-Evaluation

An evaluation must be evaluated. This type of evaluation is labeled as meta-evaluation and is defined as the process of delineating, obtaining, and applying descriptive information and judgmental information about the utility, feasibility, propriety, and accuracy of an evaluation in order to guide the evaluation and publicly report its strength and weaknesses (JCSEE, 2003; Scriven, 2000; Stufflebeam, 2001).

## 5. Meta-Evaluation Standards

The standards that are used for meta-evaluation are drawn only from the meta-evaluation checklist proposed in an evaluation project by Stufflebeam (1974). We therefore intend to develop a meta-evaluation checklist to carry out meta-evaluation based on the “SES” issued by JCSEE (2003). The main part of the JCSEE standards consists of the explication of the 28 standards and propriety, utility, feasibility and accuracy are emphasized.

## 6. Meta-Evaluation Checklist

An evaluation checklist is a list for guiding and assessing evaluations. A checklist can easily, effectively and accurately collect information about evaluation activities. A designed checklist can help evaluators to justify the values, advantages and shortcomings of their work based on the appropriate standards (Stufflebeam, 2000c).

The main purpose of a meta-evaluation checklist for assessing student learning outcomes system is that it can easily, effectively and accurately collect information about evaluation activities (Griffin, 2010; JCSEE, 2003; Scriven, 2000). However, a sound student evaluation system needs to be well planned and systematically conducted to achieve its intended purposes.

### **III. Methods**

The Delphi technique was utilized to develop a meta-evaluation checklist that is suitable for colleges and universities in Taiwan.

#### ***Instrumentation***

The Delphi method originated in a series of studies conducted by the RAND Corporation in the 1950's. The objective was to develop a technique to obtain the most reliable consensus of a group of experts (Dalkey & Helmer, 1963). While researchers have developed variations of this method since its introduction, Linstone and Turoff (1975) captured the common characteristics in this description:

“Delphi may be characterized as a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem. To accomplish this “structured communication” there is provided: some feedback of individual contributions of information and knowledge; some assessment of the group judgment or view; some opportunity for individuals to revise views; and some degree of anonymity for the individual responses.”

Delphi researchers employ this method primarily in cases where judgmental information is indispensable, and typically use a series of questionnaires interspersed with controlled opinion feedback (Rowe, Wright & Bolger, 1991). A key advantage of this approach is that it avoids direct confrontation with the experts.

#### ***Procedures of the Study***

The eleven invited experts audited the questionnaire item by item and provided their suggestions and comments. The 1st round questionnaire for “the meta-evaluation checklist of

the student learning outcomes assessment system for colleges and universities in Taiwan” was created after completing a discussion with the adviser. The researcher reiterated the same process 3 times. In this way the refined 2<sup>nd</sup> and 3<sup>rd</sup> round questionnaires were generated. Finally, the checklist was fixed and confirmed. The checklist is applicable to colleges and universities in Taiwan.

### ***Research Problems and Scope***

The research problems, subject and scope were determined after the survey and review of the development of higher education evaluation systems were completed.

### ***Literature Review and Analysis***

The researcher explored, studied, analyzed, compared and summarized the definitions, standards and methodologies concerning higher education evaluation systems. The theory and architecture of the meta-evaluation checklist were determined after the exploration of relevant studies was completed.

### ***Initial Questionnaire***

After the literature analysis, the researcher designed an initial questionnaire for “the meta-evaluation checklist of the student learning outcomes assessment system to improve student evaluations” at colleges and universities in Taiwan based on the checklist proposed by the JCSEE (2003).

### ***Experts’ Review***

The invited experts audited the questionnaire item by item and provided their suggestions and comments to help to identify the potential problems about the applicability and representative.

### ***Modification of Checklist***

The feedback from experts was discussed by the researcher and adviser. Then the researcher corrected the initial questionnaire for “the meta-evaluation checklist of the student learning outcomes assessment system for colleges and universities in Taiwan”. These corrections made the questionnaire more suitable and applicable to colleges and universities in Taiwan.

### ***Questionnaire***

The 1st round questionnaire for “the meta-evaluation checklist of the student learning outcomes assessment system for colleges and universities in Taiwan” was created after the researcher discussed the feedback with the adviser.

### ***Investigation by Delphi Method***

The eleven invited experts audited the questionnaire item by item and provided suggestions and comments. The 1<sup>st</sup> round questionnaire for “the meta-evaluation checklist of the student learning outcomes assessment system for colleges and universities in Taiwan” was created after discussion with the adviser.

The researcher reiterated the same process 3 times. In this way the refined 2<sup>nd</sup> and 3<sup>rd</sup> round questionnaires were generated.

### ***Analysis and Discussion***

According to the results of group discussions among the 3 rounds of questionnaires, the task of statistical analysis was executed to modify and correct the checkpoints.

### ***Complete Checklist***

Finally, the checklist was fixed and confirmed. The checklist is applicable to colleges and universities in Taiwan.

### ***Conclusions and Discussion***

Based on the conclusions of this study, suggestions are offered to colleges and universities, as well as for further studies.

## **IV. Findings**

The feedback from three rounds of questionnaires were carefully collected, discussed and analyzed, leading to the development of a meta-evaluation checklist suitable for colleges and universities in Taiwan.

### ***Qualitative Analysis***

The derived meta-evaluation standards include 4 standards (propriety, utility, feasibility, accuracy) and 28 sub-standards, which are based on the “SES” issued by JCSEE (2003). The

researcher designed an initial questionnaire for “the meta-evaluation checklist for the “student learning outcomes assessment system for colleges and universities in Taiwan” based on the derived meta-evaluation. Four experienced experts were invited to review the questionnaire item by item and provide their suggestions and comments before applying the Delphi method.

The eleven participants in Delphi analysis selected by the purposive sampling method included educational experts and staff from educational administrative agencies at colleges and universities in Taiwan.

There were three stages in the process of generating the questionnaire, including design, review and modification.

### *Quantitative Analysis*

Generally, the “mean value” numbers were above 5, the value of “mode” was 6 and the value of “standard deviation” was less than 1. The results show that the items of the checkpoints were either “important”, “very important” or “less different”.

### *Propriety Standards*

In table 1, the “mean value” numbers were all above 5.5, the values of “mode” were 6 and the values of “standard deviation” were less than 1 except for items P4-3 and P7-1. The results show that the items of the checkpoints were either “important”, “very important” or “less different”. Unified points of view and consensus were reached for the propriety standards of the checkpoints.

Table 1 Analysis of the Responses for the Propriety Standards

Sub-standard	Checkpoint	Mean Value		Mode		Standard Deviation	
		2 <sup>nd</sup> round	3 <sup>rd</sup> round	2 <sup>nd</sup> round	3 <sup>rd</sup> round	2 <sup>nd</sup> round	3 <sup>rd</sup> round
P1 Service to Students	1. Evaluation system should promote sound education principles and fulfillment of institutional missions.	5.72	5.72	6	6	0.46	0.46
	2. Evaluation system should serve the needs of students.	5.54	5.72	6	6	0.93	0.46
P2 Appropriate Policies and Procedures	1. Written policies should be developed and implemented.	5.81	5.90	6	6	0.40	0.30
	2. Written procedures should be developed and made available.	5.72	5.81	6	6	0.46	0.40
P3 Access to Evaluation Information	1. Access to a student’s evaluation information should be provided, but limited to the student and others with legitimate permission.	5.54	5.81	6	6	0.82	0.40
P4	1. The procedures, meanings and purpose	5.63	5.81	6	6	0.67	0.40

Treatment of Students	should be explained with understandable manner.						
	2. Establish procedures for dealing with the problems during the process of evaluation.	5.54	5.72	6	6	0.68	0.46
	3. Students should be treated with respect throughout the process of evaluation.	5.63	5.54	6	6	0.50	0.52
P5 Rights of Students	1. Evaluations of students should be consistent with laws and principles of human rights.	5.63	5.72	6	6	0.67	0.46
	2. Students' rights and welfare should be protected.	5.72	5.81	6	6	0.46	0.40
P6 Balanced Evaluation	1. Evaluations of students should provide information that identifies both strengths and weaknesses.	5.54	5.63	6	6	0.93	0.67
P7 Conflict of Interest	1. Conflict of interest should be avoided.	5.63	5.54	6	6	1.02	0.68
	2. Conflicts of interest should be dealt with openly and honestly.	5.54	5.63	6	6	0.68	0.67

### *Utility Standards*

In Table 2, the “mean value” numbers were all above 5 except for item U7-1, the values of “mode” were 6 except items U5 and U7-1 and the values of “standard deviation” were less than 1 except for item U7-1. The results show that the items of the checkpoints were either “important”, “very important” or “less different”. Unified points of view and consensus were reached for the utility standards of the checkpoints.

Table 2 Analysis of the Responses for the Utility Standards

Sub-standard	Checkpoint	Mean Value		Mode		Standard Deviation	
		2 <sup>nd</sup> round	3 <sup>rd</sup> round	2 <sup>nd</sup> round	3 <sup>rd</sup> round	2 <sup>nd</sup> round	3 <sup>rd</sup> round
U1 Constructive Orientation	1. Evaluation system should promote positive development of students.	5.81	5.90	6	6	0.40	0.30
	2. Evaluation system should promote integral effect of student learning outcome.	6.00	6.00	6	6	0	0
U2 Defined Users and Uses	1. The users and use of a student evaluation should be specified.	5.54	5.63	6	6	0.82	0.50
U3 Information Scope	1. The students' learning information can be selected during the process of student evaluation.	5.63	5.90	6	6	0.67	0.30
	2. The collected students' learning information should be carefully focused and sufficiently comprehensive during the process of student evaluation.	5.63	5.72	6	6	0.50	0.46
U4 Evaluator Qualifications	1. Teachers and others who value students should have the necessary knowledge and skills.	5.63	5.81	6	6	0.50	0.40

U5 Explicit Values	1. In conducting student evaluations, evaluators should identify and justify the values used to judge student performance.	5.27	5.45	5	6	0.64	0.68
U6 Effective Reporting	1. Reports of student evaluations should be clear, timely, accurate and relevant.	5.54	5.63	6	6	0.52	0.50
	2. Reports student evaluations should be helpful to students.	5.54	5.45	6	6	0.93	0.68
U7 Follow-Up	1. Student evaluations should include follow-up procedures.	4.81	5.00	5	5	1.72	0.63
	2. Students and other legitimate users can understand the information and take appropriate follow-up actions.	5.45	5.54	6	6	0.93	0.68

### *Feasibility Standards*

In table 3, the “mean value” numbers were all above 5, the values of “mode” were 6 and the values of “standard deviation” were less than 1. The results show that the items of checkpoints were either “important”, “very important” or “less different”. Unified points of view and consensus were reached for the feasibility standards of the checkpoints.

Table 3 Analysis of the Responses for the Feasibility Standards

Sub-standard	Checkpoint	Mean Value		Mode		Standard Deviation	
		2 <sup>nd</sup> round	3 <sup>rd</sup> round	2 <sup>nd</sup> round	3 <sup>rd</sup> round	2 <sup>nd</sup> round	3 <sup>rd</sup> round
F1 Practical Orientation	1. Student evaluation procedures should be practical.	5.90	6.00	6	6	0.30	0.00
	2. Student evaluation procedures can be conducted effectively.	5.72	5.81	6	6	0.46	0.40
F2 Political Viability	1. Student evaluation procedures should be planned with the anticipation of questions from students, so that their questions can be answered effectively.	5.45	5.72	6	6	0.68	0.46
F3 Evaluation Support	1. Adequate time and resources should be provided for student evaluations.	5.63	5.71	6	6	0.50	0.46

### *Accuracy Standards*

In Table 4, the “mean value” numbers were all above 5, the values of “mode” were 6 except for items A7-2 and A10-1 and the values of “standard deviation” were less than 1 except for item A3. The results show that the items of the checkpoints were either “important”, “very important” or “less different”. Unified points of view and consensus were reached for

the accuracy standards of the checkpoints.

Table 4 Analysis of the Responses for the Accuracy Standards

Sub-standard	Checkpoint	Mean Value		Mode		Standard Deviation	
		2 <sup>nd</sup> round	3 <sup>rd</sup> round	2 <sup>nd</sup> round	3 <sup>rd</sup> round	2 <sup>nd</sup> round	3 <sup>rd</sup> round
A1 Validity Orientation	1. Student evaluations can make reasonable interpretations about students' performance.	5.63	5.81	6	6	0.67	0.40
A2 Defined Expectations for Students	1. The performance expectations for students should be clearly defined.	5.36	5.63	6	6	0.80	0.50
	2. The standards for justifying learning performance should be clearly defined.	5.81	5.90	6	6	0.40	0.30
	3. Student evaluations should be planned with the anticipation of students expectations, so that expectations of actions and responsibilities can be clarified.	5.27	5.63	6	6	0.78	0.50
A3 Context Analysis	1. Student and contextual variables that influence performance should be identified.	5.09	5.45	6	6	1.04	0.68
	2. Evaluators should consider the personalized variables that influence performance.	5.36	5.45	6	6	0.92	0.68
A4 Documented Procedures	1. The procedures for evaluating students should be described, so that the procedures can be explained and justified.	5.81	5.90	6	6	0.40	0.30
A5 Defensible Information	1. The information collected for student evaluations should be defensible, so that the information can be reliably and validly interpreted.	5.63	5.63	6	6	0.92	0.67
A6 Reliable Information	1. Evaluation procedures should be developed and implemented, so that they provide reliable information for decisions about the performance of a student.	6.00	5.90	6	6	0.00	0.30
A7 Bias Identification and Management	1. Student evaluation should be free from bias, so that the conclusions can be fair.	5.72	5.72	6	6	0.46	0.46
	2. Develop a mechanism to record, manage and correct bias.	5.36	5.45	5	5	0.67	0.52
A8 Handling Information and Quality Control	1. The information collected from student evaluations should be systematically reviewed and corrected.	5.66	5.81	6	6	0.50	0.40
	2. The information collected from student evaluations should be kept secure.	5.63	5.81	6	6	0.50	0.40
A9 Analysis of Information	1. The information collected for student evaluations should be systematically and accurately analyzed.	5.81	5.81	6	6	0.40	0.40
A10 Justified	1. Develop a written framework to guide student evaluations.	5.45	5.63	6	6	0.52	0.50

Conclusions	2. The evaluative conclusions should be explicitly justified, so that students and others can have confidence in them.	5.72	5.63	6	6	0.46	0.50
A11 Meta- evaluation	1. Develop a mechanism to periodically examine student evaluation procedures.	5.63	--	6	--	0.50	--
	2. Mistakes occurring during student evaluation can be detected and corrected.	5.63	--	6	--	0.67	--
	3. Periodically examine pertinent standards and modify the procedures of student evaluations to develop sound evaluation practices.	--	5.63	--	6	--	0.50

The feedback from three rounds of questionnaires was carefully collected, discussed and analyzed. Unified points of view and consensus were reached for the accuracy standards of the checkpoints. This meta-evaluation checklist developed here is suitable for colleges and universities in Taiwan (see the Appendix 1).

## V. Conclusions and Recommendations

The main purpose of this study was to develop a meta-evaluation checklist for a student learning outcomes assessment system for colleges and universities in Taiwan. The checklist was based on *The Student Evaluation Standards: How to Improve Evaluations of Students* (SES). Qualitative and quantitative analysis methods were utilized to construct this checklist. The three-stage Delphi technique, qualitative and quantitative analysis methods were utilized to achieve the goal. The findings can hopefully provide national policy makers, education ministry officials, development organization staff, and other stakeholders with a framework and key indicators for diagnosis, discussion, and consensus building for constructing sound and sustainable student assessment systems that will support improved education quality and learning for all.

### *Conclusions*

Based on the above findings, the main conclusions of this study are summarized as follows:

1. The meta-evaluation checklist of the system for assessing student learning outcomes developed in this study is suitable for colleges and universities in Taiwan.
2. The four kinds of standards and the 28 sub-standards are all applicable to student learning outcomes assessment system for colleges and universities in Taiwan.

3. The meta-evaluation checklist of the student learning outcomes assessment system developed by this study is complete and sound for colleges and universities in Taiwan. The contents of this meta-evaluation checklist include a cover page, table of contents, and the checklist itself. The structure of the checklist includes: standards/ sub-standards, checkpoints, the data collection method and results. In total, four kinds of standards, 28 sub-standards, and 45 checkpoints are included on the checklist.

### ***Recommendations***

Based on the above findings and conclusions, the following recommendations are presented.

To promote student learning outcomes assessment systems, universities may refer to this checklist to develop or modify their meta-evaluation checklists. This will facilitate better understanding and improvement of the effectiveness of the implementation of systems for assessing student learning outcomes.

To guide planning and implementation student learning outcomes assessment systems, universities may refer to the student evaluation standards proposed here to achieve their expected goals and functions.

Based on the conclusions of this study, further studies and related research can be conducted to develop more checklists suitable for different classes, departments, colleges and universities in Taiwan.

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Appendix 1

The Meta-evaluation Checklist of Assessing Student Learning Outcomes System for Universities in Taiwan

Standards/ Sub-standards	Checkpoints	Data Collection Methods	Implementation Results
P1 Service to Students	1. Evaluation system should promote sound education principles and fulfillment of institutional missions.	Document analysis	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
	2. Evaluation system should serve the needs of students.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
P2 Appropriate Policies and Procedures	1. Written policies should be developed and implemented.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
	2. Written procedures should be developed and made available developed and made available.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
P3 Access to Evaluation Information	1. Access to a student's evaluation information should be provided, but limited to the student and others with legitimate permission.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
P4 Treatment of Students	1. The procedures, meanings and purpose should be explained with understandable manner.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
	2. Establish procedures for dealing with the problems during the process of evaluation.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
	3. Students should be treated with respect throughout the process of evaluation.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
P5 Rights of Students	1. Evaluations of students should be consistent with laws and principles of human rights.	1. Document analysis 2. Interview	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description :

		3. Questionnaire	----- <input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
	2. Students' rights and welfare should be protected.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
P6 Balanced Evaluation	1. Evaluations of students should provide information that identifies both strengths and weaknesses.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
P7 Conflict of Interest	1. Conflict of interest should be avoided.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
	2. Conflicts of interest should be dealt with openly and honestly.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
U1 Constructive Orientation	1. Evaluation system should promote positive development of students.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
	2. Evaluation system should promote integral effect of student learning outcome.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
U2 Defined Users and Uses	1. The users and use of a student evaluation should be specified.	Document analysis	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
U3 Information Scope	1. The students' learning information can be selected during the process of student evaluation.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
	2. The collected students' learning information should be carefully focused and sufficiently comprehensive during the process of student evaluation.	Document analysis	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
U4 Evaluator Qualifications	1. Teachers and others who evaluate students should have the necessary knowledge and skills.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----

U5 Explicit Values	1. In conducting student evaluations, evaluators should identify and justify the values used to judge student performance.	Document analysis	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
U6 Effective Reporting	1. Reports of student evaluations should be clear, timely, accurate and relevant.	Document analysis	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
	2. Reports student evaluations should be helpful to students.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
U7 Follow-Up	1. Student evaluations should include follow-up procedures.	Document analysis	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
	2. Students and other legitimate users can understand the information and take appropriate follow-up actions.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
F1 Practical Orientation	1. Student evaluation procedures should be practical.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
	2. Student evaluation procedures can be conducted effectively.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
F2 Political Viability	1. Student evaluation procedures should be planned with the anticipation of questions from students, so that their questions can be answered effectively.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
F3 Evaluation Support	1. Adequate time and resources should be provided for student evaluations.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
A1 Validity Orientation	1. Student evaluations can make reasonable interpretations about students' performance.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
A2	1. The performance expectations for students should be	1. Document analysis	<input type="checkbox"/> Yes <input type="checkbox"/> No

Defined Expectations for Students	clearly defined.	2. Interview 3. Questionnaire	Qualitative description : -----
	2. The standards for justifying learning performance should be clearly defined.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
	3. Student evaluations should be planned with the anticipation of students expectations, so that expectations of actions and responsibilities can be clarified.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
A3 Context Analysis	1. Student and contextual variables that influence performance should be identified.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
	2. Evaluators should consider the personalized variables that influence performance.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
A4 Documented Procedures	1. The procedures for evaluating students should be described, so that the procedures can be explained and justified.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
A5 Defensible Information	1. The information collected for student evaluations should be defensible, so that the information can be reliably and validly interpreted.	Document analysis	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
A6 Reliable Information	1. Evaluation procedures should be developed and implemented, so that they provide reliable information for decisions about the performance of a student.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
A7 Bias Identification and Management	1. Student evaluation should be free from bias, so that the conclusions can be fair.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
	2. Develop a mechanism to record, manage and correct bias.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
A8 Handling Information and	1. The information collected from student evaluations should be systematically reviewed and corrected.	Document analysis	<input type="checkbox"/> Yes <input type="checkbox"/> No

Quality Control			Qualitative description : -----
	2. The information collected from student evaluations should be kept secure.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
A9 Analysis of Information	1. The information collected for student evaluations should be systematically and accurately analyzed.	Document analysis	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
A10 Justified Conclusions	1. Develop a written framework to guide student evaluations.	Document analysis	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
	2. The evaluative conclusions should be explicitly justified, so that students and others can have confidence in them.	1. Document analysis 2. Interview	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----
A11 Meta-evaluation	1. Periodically examine pertinent standards and modify the procedures of student evaluations to develop sound evaluation practices.	1. Document analysis 2. Interview 3. Questionnaire	<input type="checkbox"/> Yes <input type="checkbox"/> No Qualitative description : -----

Using Active Case Studies to Teach Leadership, Management and Supervision

Teacher Education

Paper Session

The presentation intends to describe in detail the process of using active learning strategies, case studies, and real life new supervisor struggles to engage students in learning the fundamental basics of leadership, management and supervision. The learning process is modeled through classroom discussion, experiential learning, case development, and student group presentations. The presentation will thoroughly describe these processes.

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## Abstract

The concept of teaching leadership, management and/or supervision in higher education has normally been regulated to theory about how these concepts came into existence, along with best practices used by today's current crop of successful leaders. The list of published leadership icons includes political leaders, organizational leaders, and even civic leaders; however, these ideas, theories, and guides are much too focused on the top of the organizational pyramid, otherwise known as senior management. Normally, this is not the typical audience in an average undergraduate business program or undergraduate classroom. Students who graduate with a bachelor's degree in Business are more apt to start off in an entry level supervision position, long before they are going to take over as the CEO of a Fortune 500 company.

Commonly missing from most leadership, management and supervision programs is the hands on experiential learning that is needed for students to be prepared to enter entry level supervision and management positions.

This paper intends to describe in detail a new strategy for creating an active learning environment using student developed case studies and real life new supervisor struggles to engage students in learning the fundamental basics of leadership, management and supervision. The learning process is modeled through faculty facilitation, classroom discussion, experiential learning, case development, and student group presentations.

In this process, students use real life supervision issues taken from front line and entry level supervisors and build training programs and cases to help teach each other how to handle day-to-day problems. All done through the guidance of a professor or instructor of management, students transform the classroom into a "supervision laboratory" to be used for trial and error management planning, organizing, leading and controlling of many issues facing entry level leaders in today's business environment.

The process was used by the author of this paper and documented through several supervision courses to help identify a more active and hands on approach to teaching students how to lead and supervise. The discussion created from the process and described in this paper will identify what students and faculty found beneficial to one business school's curriculum. By using active learning techniques students became more engaged by the process, in addition to learning valuable leadership, management, and supervision skills. Theory is still taught, along with traditional lecture portions, but the value comes from the experiential learning taking place in the classroom.

**Conference Proceedings – Submission ID #439**

**Title:** Teacher Fidelity and Student Response to a Model of Differentiation as Implemented in One High School

**Synopsis:** US classrooms are becoming increasingly diverse. High schools have addressed academic diversity in several ways, including sorting students into ability-grouped classes (tracking) or mixing students into heterogeneous classes (de-tracking) and differentiating instruction to meet varying student needs. This study examines 1) how one US high school's administration addressed increasing diversity by de-tracking classes and implementing differentiation, 2) how teachers changed their practices in response to these policies, and 3) how students responded to resulting changes.

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## **Teacher Fidelity and Student Response to a Model of Differentiation as Implemented in One High School**

### *Abstract*

This study investigated how one high school faculty implemented differentiated instruction in its recently de-tracked classrooms and to what degree teachers' practices adhered to the principles of differentiation as defined in the literature. The study also examined how students at the research site responded to differentiated instruction as enacted by their teachers. Qualitative research methods (Miles & Huberman, 2004) were employed to investigate 1) how teachers of various grades and subjects (n=29) thought about and implemented differentiation; 2) how teachers (n=29) and administrators (n=7) believed students responded to differentiation; and 3) how high school students of all grade levels (n=80) thought about and responded to differentiated instruction. Classroom observations, teacher and administrator interviews, and student focus-group interviews occurred over the course of 10 months, from mid-May of one school year until mid-March of the next. All data were collected from a New England High School implementing school-wide initiatives to de-track courses and differentiate instruction in the resulting heterogeneous classes.

The study's findings indicate that the model of differentiation is comprised of interdependent principles (community-centered, based in rich curriculum, driven by formative assessment, appropriately challenging, flexibly grouped), each of which affects the others. For differentiation to be most successful, all principles must be operating in synch with each other. The use of formative assessment emerged as the most integral part of this system, as it drove the implementation of the others. Students responded favorably (increased test scores, increased motivation and satisfaction in work) to differentiated instruction, which adhered to the model, but were dissatisfied with aspects related to deviation from the model (e.g., use of flexible grouping, provision of appropriate challenge). An additional finding emerging from the study was the vital role that administrative expectations and selected staff development models played in influencing teachers' successful implementation of differentiated instruction.

**HICOEdu Conference Proceedings – Doubet and Southall – Submission ID# 439**

**Title:** Integrating Reading and Writing Instruction: The Role of Professional Development in Shaping Teacher Perceptions and Practices

**Synopsis:** The increased emphasis on preparing students to be college and career ready has significant implications for the teaching of English/Language Arts. This study examines middle and high school English teachers' perceptions and practices regarding authentic, integrated reading and writing instruction and the potential for staff development to impact these perceptions and practices. Findings indicate that focused professional development can move teachers to increased confidence and proficiency in integrating the instruction of reading and writing.

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## Abstract

Recommended pedagogy for middle-school and high-school (grades 6-12) English education integrates the teaching of "the language arts as interactive processes" (Maxwell & Meisner, 2001, p.3); in other words, teachers should weave the instruction of literature and writing together as two parts of one whole. Recommended practices include asking students to respond to reading through writing, to cite information from reading in writing, and to analyze reading for writer's craft in order to emulate that craft in student writing (National Council of Teachers of English [NCTE], 2004). However - with the exception of a focus on literary analysis - teachers of English/language arts continue to teach literature and writing as separate units, topics, and skills (Graham & Herbert, 2010). The separate and distinct articulation of reading and writing goals (e.g., Common Core State Standards, 2010) may contribute to this practice, as might the absence of training in effectively and authentically meshing the instruction of the language arts.

Since integrated instruction is recommended but seemingly not often practiced, research questions for this study are three-fold: 1) What are teachers' perceptions of and practices regarding the relationship between reading/literature instruction and writing instruction; 2) What are the influences on teachers' beliefs and practices regarding the instruction of language arts; and 3) How might a staff development experience that models integrative techniques affect teachers' perceptions and practices of melding reading/literature and writing instruction in an effective and authentic fashion?

Participants (n=16) in this qualitative study were teachers of high school English and middle school language arts who voluntarily participated in a week-long, content-focused professional development program in the southeast region of the United States in June, 2013. Prior to the intervention, participants were surveyed to determine their beliefs and practices regarding the integration of reading/literature instruction with writing instruction. They then participated in the intervention: two 1.5 hour trainings on techniques for successfully integrating literacy instruction, as well as the rationale for using such strategies. Techniques were drawn from the work of Beers (2003), Gallagher (2011) and Spandel (2012) and required participants to engage in close reading of texts for both meaning and writer's craft, and then to weave the techniques found in those texts into their own original pieces of writing. Time for reflecting on classroom applications was provided. Immediately following the training, participants were surveyed again regarding 1) their beliefs about the integration of reading/literature and writing instruction, and 2) their plans to implement integrative strategies in future lessons. Participants will receive a follow-up email with a questionnaire in early December, 2013, asking them to reflect on their post-workshop instructional practices. Those who choose to continue their participation will return the questionnaire to the researchers by mid-December, 2013.

Data analysis utilizes Miles, Huberman, & Saldana's (2013) post-positivist approach, which asserts that there are causal descriptions at the heart of social phenomena. Initial codes were derived from the literature (e.g., Brighton & Hertberg, 2004; Gallagher, 2011; NCTE, 2004); those codes serve as a conceptual framework through which to analyze the data. Data reduction occurs by organizing/clustering data from all sources around teachers' reported beliefs and instructional plans and practices.

Initial results indicate that 11 of 16 participants entered the study with a "disconnected" view of language arts pedagogy. Four of these 11 participants articulated the *belief* that reading/literature and writing instruction should be connected, but could not describe how to successfully achieve this integration in their practice. All four of these participants emerged from the study articulating plans to change their practices, but these changes remained at the surface or "strategy" level, and responses indicated no change to underlying philosophical beliefs. The remaining seven of the 11 could not articulate a need for instructional integration upon entering the study; they reported teaching reading/literature and writing as separate, distinct instructional units. All seven of these participants emerged from the study citing a new understanding of integrated literacy instruction as well as specific plans and strategies for integrating reading/literature and writing instruction in their classrooms during the 2013-14 school year. There was, however, a distinct difference in the depth of understanding demonstrated by respondents; some indicated surface level changes while others discussed a change in philosophy.

Five of 16 participants entered the study with a previously established view of literacy instruction as connected and integrated, although the complexity of their approaches varied. All five of these participants traced these beliefs and practices to either specific staff development opportunities or to the influence of mentor teachers. All five participants emerged from the intervention with a self-described reinforcement of their belief in the value of integrating reading/literature and writing instruction. In addition, these participants discussed an appreciation for additional resources and articulated plans to incorporate these newly acquired techniques into their instruction during the 2013-14 school year.

The study's preliminary conclusions indicate middle and high school English teachers believe that the various facets of reading/literature and writing instruction are connected and should be integrated; however, these same teachers may neither fully understand what "integration" means, nor be accustomed or equipped to deliver instruction in an integrated fashion. Professional development is valuable in shaping teachers' pedagogies and helping teachers put their beliefs into practice by a) recognizing where teachers are, philosophically, in their beliefs about integrated literacy instruction, b) instilling confidence in the value of integrated literacy instruction, and b) providing specific strategies and tools to help them enact their beliefs in the classroom.

Initial findings of this study indicate that teachers' practices would improve with access to sustained professional development in the integration of reading/literature and writing instruction. Such training experiences will be most effective if they adhere to the following three criteria: 1) emphasize practice rather than theory, providing instruction on specific integrative strategies; 2) feature modeling of recommended strategies within the training session, requiring teachers to themselves engage in close reading and original writing; and 3) allow time for reflection on how such literacy strategies connect with teachers' philosophies and can be woven into the curricula for teachers' particular classroom contexts.

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**Curricular contents and practical requirements of commercial and business service occupations – theoretical concepts and empirical results**

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## **Curricular contents and practical requirements of commercial and business service occupations – theoretical concepts and empirical results**

### **1. Research objectives**

The demographic change, the fall in the birthrate, and the requirement for flexibilization of occupational careers are giving rise to considerations on reducing the number of initial and advanced training occupations in the German “Dual System”. At the same time, one of the objectives of a debate on occupational core profiles taking place at a European level is increasing employment opportunities for those who have completed training. The project on “similarities and differences between commercial and business service occupations” aims at finding a set of common core and comparable qualifications/requirements of service occupations as well as their main differences.

The aim of this contribution is to present the results of a survey of 2.304 employees in commercial and business service occupations. It was conducted to find out more about employees’ tasks, skills and self-concepts. The basis for the hypotheses and the questionnaire design is a systematic analysis of the relevant initial and advanced training curricula. Additionally data from the German BIBB/BAuA Employment Survey 2011/12 conducted by the Federal Institute for Vocational Education and Training (BIBB) and the Federal Institute for Occupational Safety and Health (BAuA) are evaluated to answer the research questions.

### **2. Body of knowledge**

Flexible disposition of the good work (cf. Boes/Kämpf 2008), a “market-oriented mode of control” (Kotthoff 1997, p. 293) and an increasing focus on customers and services are basic changes in commercial occupations. The self-conception’s of workers trained in commercial occupations includes an interest to help develop and contribute to the enterprise’s interests (Weber-Menges 2004). The project identified the following as central and ongoing trends influencing commercial and business service trainings and occupations: There is an increasing informatisation of work-processes, which have changed their contours due to international division of labor and cooperation (Boes/Kämpf 2010). Also a subjectivication and delimitation of work is seen to take place. The results are a flexibilization of working-hours and -places, work organized in projects, in some branches a filialization of commercial and business service occupations leading to working conditions like in self-employment and precarious job conditions (Voss-Dahm 2009). Service occupations today are formed by a rationalization of processes and a focus of all employees on increasing the enterprise’s value (financialization) and target achievement. This goes together with centralized strategic decisions and operative decentralization, controlled via the company’s strategic objectives (Haipeter 2011, p. 135).

Discretion rises regarding communicative interfaces inside and outside the enterprise being modeled by the employees – demanding translations of economic logic and symbols into different contexts (cf. Kaiser 2012, p. 6f.). This increasingly requires the ability to reflect connections, knowledge of business processes and a competence of organizing creatively (Brater/Freygarten/Rahmann/Rainer 2011, chp. 3.4) so that aspects of self-employment also become integrated in vocational training curricula.

Several aspects of commercial thinking and acting are discerned: on the basic level of concrete transactions merchants' thinking and acting is marked by communicative and interactive tasks, use of planning, organizing, regulating, documenting and balancing systems, thus constituting situations and interactions with binding character influenced by typical spheres of activities (Tramm 2009). They consider company-specific conditions, aims and processes as well as external ties to markets, relevant political trends and applicable laws (cf. Kaiser 2012, p. 10).

### **3. Proposed methodology**

In the project a theoretical concept of commercial thinking and acting was set up, grounded in a historical and a sociological literature study. It is aimed at defining merchants' mentality and work capacity and the "cultural difference" between industrial-technical and commercial occupations (cf. Reinisch 2011; Haipeter 2011).

A document-analysis of the curricula of 55 initial and 33 further trainings in service occupations regarding their commonalities and differences was carried out. It is now possible to say which contents are learned in which contexts and institutions, what their impact on the vocational qualification is and how they are examined. This analysis was complemented by historical and sociological literature studies (cf Reinisch 2011; Haipeter 2011).

Data from a follow-up study to the German BIBB/BAuA Employment Survey 2011/12 of employees in commercial and business service occupations were analyzed. With this analysis we intend to gain deeper understanding on tasks, skills and self-concepts of service-workers as well as their demand for further qualification and their future prospects. It was conducted as a CATI-survey (Computer Assisted Telephone Interview). A sample of 2.304 employees in 10 relevant occupational groups is covered. The survey connects to results of the document-analysis and the literature studies, which also include elements of economic-pedagogical theoretical models. The survey data is used to validate the theoretical assumptions.

### **4. Discussion of expected outcomes**

A central result of the content analysis was a system of categories structuring subject matters and competencies in commercial vocational trainings. „Commercial communalities“, „commercial specialties“, „comprehensive qualifications“, and „non-commercial qualifications“ are differentiated. Within the 55 vocational trainings there are 69 percent of communalities – at least on a high aggregation level. The share of specialties lies around 13 percent. Comprehensive qualifications, not containing any specificities, hold a share of 15 percent. Lastly there are 3 percent of non-commercial qualifications. The following subject matters and fields of action show the highest shares: accounting and controlling, marketing, information and communication as well as law and contracts.

Conclusions on the commercial profile of singular occupations as well as, based on these profiles, grouped occupations can be drawn. We can also deduce evidence on different levels of initial and further vocational trainings plus improve concepts of linking initial and further vocational trainings. Descriptive analyses of the quantitative data give some hints on activities, skills and self-concepts in commercial and service occupations. The survey showed that all commercial employees accomplish tasks regarding the company's accounting in terms of accounting documentation. Furthermore the evaluation of controlling data is to some extent part of their tasks. This validates the outstanding role corresponding learning

contents in “commercial accounting and controlling” have within the curricula. The survey indicates that all groups of commercial employees need basic knowledge in the areas of contract law, employment law and tax law. This also validates the findings of the curricula-analysis. The same applies to the area “information and communication”, which is also an important part of the curricula. Regarding this 97% of the employees state that communicative skills are ‘very important’ or ‘important’ for their occupation. We analyze differences in internal and external communications for each occupational group, with internal communication being far more important. So far the assumption that commercial knowledge and skills cannot be learned only on the job, but need a systematical instruction within vocational school or other courses could only be proved gradually. However the assumption that the self-concept of commercial employees is formed by customer- and market-orientation is supported by the data. The importance of generic skills is dependent on the occupational status, while chances for professional development are influenced by qualificational levels. Economic sustainability is mediated by self-concepts and orientation. Finally the assumption that commercial employees have room for designing their own work proceedings but not regarding the business processes of their enterprise could be confirmed. Overall differences between male and female employees seem to be marginal.

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# Cloud Service Model for ERP Experiment Teaching

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**Abstract:** The purpose of this paper is to solve the existing problems in ERP experiment teaching, such as high cost of hardware and software, difficulties in software maintenance, and complex issues in basic data management, by the application of cloud service. As cloud computing in the education field has been bringing a broad space for the development of the cloud service, this study built a cloud-based ERP experiment teaching model. The model is constituted by the cloud service platform, cloud services terminals and teaching service, which fully reflect the four elements, i.e., context, collaboration, exchange and sharing in the teaching environment. Then, the features of ERP experiment teaching by cloud service are analyzed, including system flexibility, versatility, virtualization, and low cost. Finally, SAP ERP application cloud platform is used as an example to illustrate the application of the proposed model.

**Keywords:** ERP; Experiment Teaching; Cloud Service; Cloud Computing

***Pioneers for Justice:***  
***A Social-Historical Examination of Daisy Bates and the Little Rock Nine***  
**Bridging History through Social Studies Curriculum in Grades 4<sup>th</sup> – 8<sup>th</sup>**

**Topic Area:**

Curriculum, Research and Development

**Presentation Format:**

Panel Discussion

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## Abstract

*Pioneers for Justice: A Social-Historical Examination of Daisy Bates and the Little Rock Nine* is a curriculum, based on the documentary, *Daisy Bates: First Lady of Little Rock*, a film produced by Sharon A. La Cruise. The Pioneers for Justice Curriculum focuses on the role of Daisy Bates and the Little Rock Nine during the 1957 Integration Crisis at Little Rock Central High School in Arkansas. It examines effects of public school segregation and integration, and the how past historical implications impact experiences of current students in public schools today. The curriculum is organized as an interdisciplinary thematic unit, based on the Bowie State University Conceptual Framework Dispositions and the University of Arkansas at Little Rock Standards of Professional Conduct. The paper will discuss how the Curriculum Instruction Specialist designed the curriculum as a pilot and implemented in an Assistant Professor of Education Social Studies Methods course.

Social Studies Common Core State Standards are intertwined with this historical Civil Rights Event to bring together the integration of activities and lessons. The instructor used and will continue to use the curriculum to teach lesson and unit planning, the history of Daisy Bates and the Little Rock Nine; exposing students to social studies, reading, writing, and technology integration. Each lesson and activity includes differentiated instruction practices and strategies to meet the learning needs of all students engaged. The curriculum is fully integrated with media, social media, and technology.

The initial curriculum will be implemented by pre-service educators who are in the “Student Teaching Phase” of their programs in the Colleges of Education at Bowie State University and the University of Arkansas at Little Rock. Gradually, the curriculum will be expanded and re-designed for educators to teach in other states to include districts in rural and urban areas. Also, pre and post surveys will distributed to teachers and students to collect data on the effectiveness of the curriculum as it evolves.

The final curriculum design document, will include the framework for each lesson plan and activity, list of activities with additional descriptions and specific detail to include, list of lesson plans with additional descriptions and specific details to include, methods and procedures; assessments and evaluations, a list of materials, upcoming curriculum presentations/workshops of the unit, a list of resources for students, and a list of resources for teachers.

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6. Abstract

## **Abstract - The Urban Garden as an Educational Environment**

The World Commission on Environment and Development (WCED) defines sustainable development as “a process towards a new normative horizon...a paradigm shift from development based on inequity and overexploitation of natural resources and environmental services, to one that requires new forms of responsibility, solidarity, and accountability”(1987). Education for Sustainable Development (ESD) provides people with knowledge, skills, attitudes and values necessary to shape a sustainable future for themselves and others. ESD integrates key sustainable development issues and concepts into teaching and learning. Increasing knowledge related to topics like the importance of biodiversity, and environmental benefits of composting, and principles of water and soil conservation can help change learners’ attitudes and behaviours towards the environment in a positive way. Such individual changes may be the foundation to societal sustainable development.

One strategy for ESD is utilizing urban gardens as educational environments. The urban garden can become a living classroom preparing gardeners and others with knowledge, skills and attitudes to take action and lead to way to a sustainable future. Urban gardens are one type of urban agriculture. Mougeot’s (2000) defines urban agriculture, “an industry located within (interurban) or on the fringe (periurban) of a town, a city or a metropolis, which grows or raises, processes and distributes a diversity of food and non-food products, using largely human and material resources, products and services found in and around that urban area, and in turn supplying human and material resources products and services largely to that area” (p. 49). Types of urban gardens that can become living classrooms include house lot gardening, school-yard gardens, roof-top gardens, community gardens, backyard or kitchen gardens, and allotment gardens.

This poster includes a description of types of urban gardens and discussion of ways urban gardens can be used as educational environments. The urban garden can teach learners about principles of science, chemistry, physics, health, and environmental studies. Students can draw from the urban garden to increase their understanding of environmental/ecological, human health, and social and economic concepts and theories. Specifically, planting, maintaining and harvesting an urban garden can help participants increase knowledge related to the importance of biodiversity, environmental benefits of composting, and principles of water and soil conservation. This experiential education can help change attitudes and behaviours towards the environment in a positive way. A modified model of human development that includes health promotion and sustainable development (Kickbusch, 2010) is used to examine selected possible linkages between the educational benefits described. Findings from research literature in terms of

educational outcomes of urban gardening including increased environmental awareness, social and personal growth, increased science and gardening skills, social and personal development are detailed. This background and theory are used to propose an educational urban community garden design that could help to achieve ESD. The poster also outlines constraints related to utilizing urban gardens as educational environments and poses questions for further research related to urban gardens and ESD including evaluation of gardens as learning tools, and short and longer term impact on learners participating in urban gardening learning experiences.

# **Role Modeling: The Forgotten Part of Elementary School Physical Education**

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## **Abstract**

The elementary school years are a crucial time period for a child's physical development (Fishburne, 2005). A major aim of elementary school physical education programming is to help children become physically educated (Hickson & Fishburne, 2005) in order to choose physically active and healthy lifestyles (Rink & Hall, 2008). What teachers do to achieve this aim is a critical consideration. In order for children to become physically educated, teachers need to create conducive learning environments. Therefore, teachers must use all the skills and resources at their disposal to develop a learning environment for children that supports the development of physically active and healthy lifestyles. Issues such as planning, lesson delivery (Rink, 2006), and the evaluation of learning (Pangrazi & Beighle, 2013) have continued to be constant themes of consideration and thought. However, although a teacher may be well-planned (e.g., lesson plans, assessment tools, etc.) when entering the learning environment, an area often overlooked is the importance of teacher as a role model in physical education. Role modeling is a powerful teaching tool (Cardinal & Cardinal, 2001). With the skills, talents and attitudes teachers possess or lack, they are one of the key, perhaps the most important, building blocks of the educational system (Yalmiz, 2011). In fact, teachers have the opportunity to impact children in a positive manner every school day (Vidourek, et al., 2011). For example, teachers who take pride in being physically active and demonstrate motor skills during physical education lessons can influence school children in a positive manner (Pangrazi & Beighle, 2010). The purpose of the paper is to communicate the importance of "teacher as a role model" in physical education. When striving to enhance teaching effectiveness in physical education, role modeling is a teaching strategy that must be considered. However, it seems that in our schools, role modeling can be a forgotten element of teaching. Hence, this is an issue that deserves further consideration and discussion.

## Introduction

*“Every experience influences in some degree the objective conditions under which further experiences are had.” (Dewey, 1938)*

The elementary school years are a crucial time period for a child’s physical development (Fishburne, 2005). A major aim of elementary school physical education programming is to help children become physically educated (Hickson & Fishburne, 2005) in order to choose physically active and healthy lifestyles (Rink & Hall, 2008). What teachers do to achieve this aim is a critical consideration.

In order for children to become physically educated, teachers need to create conducive learning environments. Therefore, teachers must use all the skills and resources at their disposal to develop a learning environment for children that supports the development of physically active and healthy lifestyles. Issues such as planning, lesson delivery (Rink, 2006), and the evaluation of learning (Pangrazi & Beighle, 2013) have continued to be constant themes of consideration and thought. However, although a teacher may be well-planned (e.g., lesson plans, assessment tools, etc.) when entering the learning environment, an area often overlooked is the importance of “teacher as a role model” in physical education.

*“Role modeling is a powerful teaching tool.” (Cardinal & Cardinal, 2001)*

With the skills, talents and attitudes teachers possess or lack, they are one of the key, perhaps the most important, building blocks of the educational system (Yilmaz, 2011). In fact, teachers have the opportunity to impact children in a positive manner every school day (Vidourek, King, Bernard, Murnan, & Nabors, 2011). For example, teachers who take pride in being physically active and demonstrate motor skills during physical education lessons can influence school children in a positive manner (Pangrazi & Beighle, 2013).

## Purpose

*“It is possible learners have a difficult time valuing knowledge when they perceive that the teacher does not model the information presented ...” (Dean, Adams, & Comeau, 2005)*

The purpose of the paper is to communicate the importance of “teacher as a role model” in physical education. When striving to enhance teaching effectiveness in physical education, role modeling is a teaching strategy that must be considered. However, it seems that in our schools, role modeling can be a forgotten element of teaching. This is an issue that deserves further consideration and discussion.

## Teachers as Role Models

In a recent study, Vidourek, et al. (2011), reported that teachers who were enthusiastic toward children and the subject material created more positive, welcoming learning environments.

Teachers who are consistently enthusiastic in the classroom act as an impetus for academic achievement whilst motivating learners to connect to others and the school as a whole (Vidourek, et al., 2011). Yilmaz (2011) supported this by contending that teachers who role model positively in the classroom through enthusiasm and excitement toward the learning outcomes contribute to academic success by encouraging learners to participate willingly in learning activities and to remain focused.

Enthusiasm for teaching is commonly defined as a teacher's use of eye contact, facial expression, vocalization, gesturing and movement throughout the learning environment (Vidourek, et al., 2011). Teachers are in a unique position to role model a caring attitude through recognition of each child in the learning environment as well as modeling key behaviors of concern, support and understanding for all school children (Martino & Rezai-Rashti, 2012; Vidourek, et al., 2011).

### **Teacher as a Role Model in Physical Education**

*"Whether they like it or not, physical educators must view themselves as role models."*  
(Dean et al., 2005)

Understanding the relative contributions of role modeling physical activity and fitness-promoting behaviours towards children has been identified as an understudied and potentially powerful influence in promoting physically active lifestyles within society (Cardinal, 2001). In 2004, the National Association for Sport and Physical Education (NASPE) suggested that teachers of physical education should teach children what to do to be healthy and fit, how to do it, and why it is important. Therefore, the actions of teachers of physical education seem to be as important as the material being presented during lessons.

In addition to teacher actions, the appearance (i.e., clothing) of teachers of physical education has also been found to play an integral part in the learning environment. For example, what a teacher chooses to wear while teaching physical education can lead to children's perceptions towards the teacher and the subject area. Bradford and Hickson (2010) found that children do form perceptions of their teacher the moment the teacher enters the physical education environment. These perceptions formed by the children are primarily due to what the teacher is wearing (i.e., appearance).

Hence, the actions and appearance of a teacher during a lesson is a form of role modeling (Pangrazi & Beighle, 2013). For example, teachers of physical education who take pride in being physically active and demonstrate motor skills during lessons can influence children in a positive manner (Pangrazi & Beighle, 2013). Fishburne (2005) holds a similar view by contending that teachers of physical education should demonstrate motor skills and participate regularly in the physical activities with children during lessons.

## **How Can Teachers be Role Models in Physical Education?**

We believe that teachers can be role models in the physical education class by: CARING, USING, CHOOSING, GIVING, UNDERSTANDING and BEING.

### **CARING toward Learning and Learners**

*“Students will advocate either for or against physical education, and that outcome is largely contingent on the caring education that physical educators provide.” (Rikard, 2009)*

Teachers can show children that they truly care about their learning by engaging in the learning process. Fostering interpersonal relationships with children based on a caring perspective requires teachers to interact with children, to develop mutual trust and respect, and to attend to children’s needs (Rikard, 2009). A caring attitude toward children and their learning is a strategy that has been found to build rapport between teachers and learners (Bradford, Stanec, & Hickson, 2012). Such rapport can be most beneficial, as Rikard (2009) contended that care plays a part in the enhancement of children’s learning.

### **USING a Variety of Teaching Styles**

*“Different teaching styles promote different types of learning.” (Fishburne, 2005)*

Teachers can use a variety of teaching styles throughout their physical education programs. Using different teaching styles can provide children with opportunities to reproduce and produce knowledge (Mosston & Ashworth, 2002). Teaching styles differ from one another depending on the level of control a teacher chooses to retain. Numerous authors have identified different styles available to educators (Fishburne, 2005; Mawer, 1999; Grasha, 1996; Siedentop, 1991). Although several of these styles are similar, there are also significant differences. For example, providing learners with opportunities to discover the proper way to kick a soccer ball is much different from a teacher directly showing the proper way of doing so. Using different teaching styles can offer learners with different opportunities to obtain knowledge. For example, the use of a variety of teaching styles throughout the school year can support the learning of the foundations of movement (i.e., basic fundamental motor skills) required for all types of physical activity (e.g., soccer, skipping, taekwondo) (Mosston & Ashworth, 2002; Na, 2009).

### **CHOOSING to Wear Appropriate Clothing for the Learning Environment**

*“Appropriate dress is a sign that an individual is responding to situational demands.”  
(Workman & Freeburg, 2009)*

What a person chooses to wear is a powerful communicator (Damhorst, Miller-Spillman, & Michelman, 2005; Roach, 1997). Therefore, first impressions, which lead to firmly held perceptions by children at the beginning of a class, are affected by a combination of teacher

characteristics including the teacher's clothing (Workman & Freeburg, 2009). For example, the clothing being worn by a teacher in physical education must fit that of a person who is prepared to engage in physical activity or children may perceive the teacher as uncaring toward the subject area, not prepared to demonstrate the skills, and/or disinterested in engaging in physical activities (Bradford & Hickson, 2010). The selection of professional attire enhances occupational attributes of teachers (Gordon, 2010). Therefore, in physical education, teacher clothing that is associated with physical activity should be recognized as a teacher's choice of attire.

### **GIVING Proper Attention toward Curriculum Outcomes**

*"Teachers of physical education have the responsibility to develop and teach programs that physically educate elementary school children."* (Hickson & Fishburne, 2005)

Through innovative teaching approaches, teachers can offer breadth and variety in quality physical education programs. By attending to children's learning needs, the use of different resources can assist in the learning process. For example, bulletin boards, DVDs, task cards, music, an array of developmentally appropriate equipment, etc. can be included throughout a quality physical education program. Special guests, such as physical education consultants can join the class to introduce new activities that can assist learning. Attention to lesson plan delivery, assessment strategies and facility choice can become a regular part of a teacher of physical education's planning. Moreover, a teacher who is well planned and organized with long-, mid-, and short-term plans, assessment strategies, etc. in place would afford them the flexibility throughout the year to create, modify and reflect on children's overall learning.

### **UNDERSTANDING the Impact of Demonstrations**

*"Presenting a motor task by role modeling is one of the most powerful forms of communicating to children in physical education."* (Vogler, 2003)

An underlining basis for modeling is that it becomes easier to perform a motor task more proficiently after watching the task being modeled (Vogler, 2003). The use of demonstration is part of a larger issue related to presenting information clearly to learners and is better understood as part of the process of communication. The combination of verbal and visual information and rehearsal are most effective when the objective is to provide the learner with a clear idea of how to perform a motor task (Rink, 2010). When teachers of physical education demonstrate motor skills, participate in physical activities with children, and display enthusiasm consistently during lessons can help children reach higher levels of motivation (Vidourek et al., 2011).

### **BEING Willing to Send Proper Active, Healthy Lifestyle Messages**

*"It is essential that as role models, physical educators exhibit healthy lifestyle practices to optimize teaching effectiveness."* (Cardinal & Cardinal, 2001)

It would not be difficult to argue that, on a daily basis, teachers are constantly sending messages to children (Hickson & Bradford, 2010). For example, when teaching the importance of nutrition and active, healthy living, teachers can role model behaviors that they want children to learn from. Hence, teachers can either show their children that they believe in what they are teaching, or not. If a teacher stresses to his/her children that healthy eating is an important part of healthy living, then mixed messages will be communicated if the teacher chooses to eat an unhealthy lunch in front of them. In addition to eating habits, lifestyle choices can also be communicated to children. Ideally, effective teachers model, and thus teach, the most current information in their field. Since the promotion of “healthy, active lifestyles” appears to be a primary goal of physical education, effective teachers of physical education should teach and role model the most favored behaviors and processes for improving their health and physical fitness (Dean et al., 2005).

### **Ideas for Future Thinking and Research**

*“Teachers possess the unique opportunity to impact children in a positive manner every school day.” (Vidourek, et al., 2011)*

This area of research on “teacher as a role model” in physical education has the potential to make a significant contribution to the field, especially at a time when there is so much emphasis on obesity rates, sedentary lifestyles and low levels of self-efficacy. If teachers of physical education become more aware of the importance of “teacher as a role model” in physical education, children’s learning may be enhanced leading to greater levels of self-efficacy. This, in itself, may play an instrumental part in helping children increase their potential to live active, healthy lifestyles through quality physical education programs during their elementary school years.

Based upon the literature that is available, it is evident that role modeling has a substantial impact on children’s learning. It is, therefore, essential that we, as researchers in education, continue to identify effective strategies to help teachers understand the importance of role modeling, and investigate this phenomenon in order to develop conducive learning environments.

### **Conclusion**

*“Elementary school physical education programs should provide breadth, variety, and educational experiences that help develop whole children.” (Hickson, 2003)*

In order to physically educate “whole” children, role modeling is an essential part of teaching that requires greater attention. There are several ways that teachers of physical education can be role models to their children, including, caring, using, choosing, giving, understanding and being. For example, role modeling active, healthy behaviors is one method that children will observe during the school day. Hence, mixed messages will occur when teachers say one thing,

and do another in front of children. By reading this paper, it is hoped that a deeper level of understanding toward the importance of “teacher as a role model” in physical education has been reached.

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# **“Creative Drama Exercises For Children With Social-Emotional Disturbances Due To Parental Separation”**

## **Special Education**

### **Paper Session**

#### **Description:**

Creative drama exercises were utilized in this research as a therapeutic technique in improving the social-emotional disturbances of students with Emotional/Behavioral Disturbances (E/BD). The drama exercises used were concentrated on play, games and improvisation concentrating on making the subjects of the study feel comfortable and not necessarily making an immediate breakthrough in their progress (The Drama Therapy Institute of Los Angeles, CA, 2008).

#### **Abstract**

This is a descriptive-experimental study on the effects of creative drama exercises in improving the social-emotional development of 8 male pupils aging 9 to 12 years old identified as having Emotional/Behavioral Disturbances (E/BD) caused by parental separation in Saint Paul SPED International Foundation, Baguio City, Philippines. The participants were identified as having E/BD using a checklist before engaging in the creative drama exercises. After a month, the post-evaluation was conducted. The prepared Creative Drama Exercises had twelve sessions conducted within a month, three times a week. The styles and techniques on creative drama exercises were adapted from Ian McCurrach & Barbara Darnley’s Special Talents, Special Needs: Drama for People with Disabilities (1996). The findings are as follows: the creative drama exercises significantly modified the social-emotional disturbances of children with E/BD; and the creative drama exercises slightly affected the social-emotional disturbances of children with E/BD within the program of twelve sessions.

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## 6. Abstracts:

**Title: Finland's Teacher Preparation built upon collaboration and inquiry**

**Author: Cynthia Coler**

This paper examined the teacher preparation process and the collaboration of universities and school sites in training teachers. Becoming a teacher in Finland is a challenging undertaking and students must rank within the top five percent of their graduating classes. Through interviews with several Finnish teachers and university professors in both rural and urban communities, published articles and books, trust and autonomy among teachers ranked very high in creating collaborative learning environment. This type of teacher leadership can guide and shape student learning.

**Title: Curriculum Instruction, Multilingualism, and Educational Values of Finland**

**Authors: Martha Romero and Sue Parsons**

In this investigation, we focused on the connection between curriculum, instruction, and multilingualism along with the values that are the basis of the Finnish education system. The principles of student welfare services, a cooperative between the home and school, and vocational/educational guidance are all provisions of the national curriculum. Teaching values and national culture are paramount to the foundation of their education. This includes mother tongue learning as well as multilingualism in order to compete in a global economy.

Our investigation included research on the Finnish education system and a visit to schools in Espoo and Kokkola Finland. The resulting paper and presentation provide a look at some of the practices that make Finland a top performing education system based on international assessments.

**Title: The Roles and Responsibilities of Educational Leaders: A Contrast in Administrative Duties Across the Continents**

**Author: Dr. Colleen Robertson**

This investigation looks at the differences and similarities of the role of the Administrator at the school site in the U.S. as opposed to role of the Administrator in Finland. From Headmaster, to Principal, to Superintendent, how are these disparate roles impacting student academics? Can the duties of the administrator have a positive impact on student achievement and on the effectiveness of the teaching staff? First hand visits to schools in Finland reveal a contrast of administrative duties, expectations, and hierarchy in comparison with those found in the United States. This investigation reveals some of the lessons we can learn to help our administrators be more effective and successful educational leaders.

**Title: Policies that Inform Success in K-12 Education**

**Author: Dr. Janice Tucker**

This paper examines policy in Finland that supports and informs their education system. Through the examination of policy documents, interviews and visits to

schools and universities this paper compares the social, cultural and educational policies that have over time created a system that is recognized globally as equitable and highly successful. The results of this study can inform teachers and administrators and enlighten future policy direction.

Spotlight on Professional Learning Communities: How Principal Leadership Behaviors  
Can Influence Student Achievement

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### **Abstract**

The purpose of this study was to investigate teacher perceptions of principal's leadership behaviors as they relate to Professional Learning Communities (PLCs). This quantitative study utilized a validated survey and responses from one hundred and seventy three teachers. The five variables that emerged were: (1) Shared Vision and Mission, (2) Culture of Collaboration, (3) Focus on Improvement, (4) Shared Leadership, and (5) Personal Practice, and their influence on school achievement.

An independent sample t-test was conducted to evaluate the differences between high and low achieving schools, on each of the five variables of PLCs. Results suggested a statistical significance between teacher perceptions of Personal Practice through their perceptions of principal leadership behaviors, between high and low achieving schools. Results of the logistic regression, indicated Personal Practice is the major predictor, followed by Focus on Improvement, of a teacher responding from a high achieving school. A path analysis determined Shared Leadership and Culture of Collaboration are the major predictors of Personal Practice, which in turn was used as a mediator of achievement.

**Keywords:** Teacher Perceptions, Principal Leadership Behavior, Professional Learning Communities

*The most promising strategy for sustained, substantive school improvement is developing the ability of school personnel to function as professional learning communities.*

*~Richard DuFour*

Today's educational institutions face a plethora of obstacles affecting daily operations and organizational structures. External and internal factors such as greater academic challenges for students, budgetary limitations, lack of effective leadership, and increased teacher accountability have forced schools to prioritize decision making as stakeholders navigate outside influences, state and federal mandates, and augmented expectations/accountability. Despite the growing list of challenges today's schools face, educational institutions are still charged with the task of educating students. To accomplish this task, administrators are challenged to find ways to professionally develop staff with limited resources. Fostering a Professional Learning Community (PLC) provides one method of increasing a school's capacity to address challenges a daily.

The research knowledge base and the articulation of profession standards within education expanded over the past quarter century, (DuFour & Eaker, 1998). Many educators are unaware of, or are inattentive to research focusing on effective pedagogical strategies and improving student achievement. Members of a PLC make these findings the basis of their collaborative efforts toward achieving a shared vision and goals (DuFour & Eaker, 1998).

The PLC model is built upon the foundational belief that the core mission of formal education is not simply to ensure that students are taught but to ensure that they learn. The shift in perspective from a focus on teaching to a focus on learning has profound implications for schools. PLCs focus on the processes of learning and grapple with questions of what, when, and how learning should take place. Learning communities

place an emphasis on organizational structures, relationships, and the nature of individuals within an organization. PLCs rely on collaboration and focus on ways that educators can work together to facilitate change and school improvement (DuFour, 2004).

Research focusing on educational reform influenced the conceptualization of processes involved in PLCs. According to Huffman and Hipp (2003), PLCs are a way of working; "a school's professional staff members who continuously seek to find answers through inquiry and act on their learning to improve student learning" (p. 4). Further, DuFour (2004) expressed concern that PLCs may lose their credibility as an important part of education reform unless educators think critically about the fundamental concepts which make up the model. As a tool for school reform, Huffman and Hipp (2003) asserted a PLC is "the most powerful professional development and change strategy available" (p. 4). What educators are looking for in today's school reform initiatives are those that result in not only improved teaching, but also in overall school improvement and student learning. Vescio, Ross, and Adams (2008) reviewed six separate research studies that scrutinized the relationship between teachers' participation in PLCs and student achievement. The results of all six studies revealed that student learning improved when teachers worked in PLCs.

The purpose of this study was to investigate teacher perceptions of principal's leadership behaviors through the frame of Professional Learning Communities: (1) Shared Vision and Mission, (2) Culture of Collaboration, (3) Focus on Improvement, (4) Shared Leadership, and (5) Personal Practice, and their relationship school achievement.

### Theoretical Perspective

PLCs have been present within the current body of research. Each definition has a slightly unique perspective, but there are major themes throughout, including (1) Shared Vision and Mission, (2) Culture of Collaboration, (3) Focus on Improvement, (4) Shared Leadership, and (5) Personal Practice.

According to DuFour, DuFour, and Eaker (2008), there are six characteristics of PLCs. “1. Shared Mission (Purpose), Vision (Clear Direction), Values (Collective Commitments), and Goals (Indicators, Timelines, and Targets) – All Focused on Student Learning; 2. A Collaborative Culture with a Focus on Learning; 3. Collectively Inquire Into Best Practices and Current Reality; 4. Action Orientation: Learning by Doing; 5. A Commitment to Continuous Improvement; and 6. Results Orientation” (pg. 15 – 17).

Richardson (2011) contributed to the research on PLCs by defining the responsibilities of educators. “In the new culture, educators assume collective responsibility for student outcomes. At the heart is the belief that a team of teachers working together can achieve more than one teacher working alone” (pg. 29).

In addition, Thessin and Star (2011) further defined the four key roles for districts in the implementation of PLCs as providing. “Ownership and support; professional development, clear improvement process; and differentiate support” (pg. 51).

The practice of building successful PLCs can extend beyond the borders of the school or district. Linder, Post, and Calabrese (2012) studied the factors that contributed to successful PLCs and how university faculty can assist in their development. The researchers selected three groups of teachers based on a match between their areas of interest and the submitted proposals. A collective case study design was used to learn

about each of the PLCs and a survey was given at the end of the year to provide qualitative ratings. “The three most highly rated components of the PLCs were (a) studying a selected topic in depth; (b) having the assistance of a university faculty member; and (c) selecting, implementing, sharing, and discussing results of activities with each other” (Linder, Post, & Calabrese, 2012, pg. 18). Key learnings from this study included establishing relationships with area schools, providing guidance to groups, allowing for autonomy, and building a sense of community.

First, classroom teachers should not hesitate to join together to investigate topics of common interest... Second, educational administrators should consider PLCs as a viable method of professional development for their building and district personnel... Third, university faculty can help establish and sustain PLCs by placing the major decision-making in the hands of the teachers” (Linder, Post, & Calabrese, 2012, pg. 20-21).

The above implications of the study are for stakeholders in considering the implementation of PLCs.

Once a PLC has been implemented, part of the on-going process is to understand the benefits to the district. An article was published about a study that was conducted by Williams (2013) to understand the differences that existed in reading achievement across different grade levels within a district that implemented PLCs and the teacher perceptions of the activities and their impact. Williams’ conducted a causal-comparative research design utilizing the Texas Assessment of Knowledge and Skills (TAKS) to collect qualitative data over a five-year period. Study results were categorized into four major themes: the collaborative teacher learning, data-driven decisions, curriculum, instruction

and student learning, and student learning. The quantitative aspect of the study included a repeated-measures ANOVA to analyze the overall percentage of passing rates within the elementary, middle, and high school levels. Results study indicated several improvements within student achievement data. After three years, there was a .33% increase mean percent passing in elementary reading scores, .75% improvement in middle school, and .67% improvement in high school achievement. Teachers at all levels expressed their beliefs that PLCs provided avenues to learn and positively impact their classroom practices. Williams concluded “This study contributed to research on PLCs by providing further evidence that potent connections among student achievement, teacher collaboration, and change continue to exist in the 21<sup>st</sup> century” (Williams, 2013, pg. 37). Additionally, Williams espoused the continuation of the PLC model as a strategy for teachers in K-12 within the district to increase student achievement.

The five PLCs components are (1) Shared Vision and Mission, (2) Culture of Collaboration, (3) Focus on Improvement, (4) Shared Leadership, and (5) Personal Practice. The current body of literature has provided the framework for the following definitions.

Shared vision and mission is the alignment of goals and objectives throughout the organization. Saban and Wolfe (2009) studied the leadership practices of 106 public school principals through a quantitative analysis of their responses to The Leadership Practices Inventory As Saban and Wolfe (2009) stated:

To motivate individuals to share your vision is a behavior that requires a trusting relationship. To “encourage” – another behavior that is learned, meaning to

hearten, to give confidence by recognizing, to show appreciation for – also requires that one have confidence in the relationship (pg. 5)

Through this study on leadership practices, mentoring was identified as an effective method of professional development for sharing a vision through relationship building.

The culture of collaboration requires that all parts of the organization are working together toward a common goal. “All department members are part of a team working towards a shared vision,” (Edmonson, Brown, Irby, & Lunenburg, 2002, pg. 11). The culture of collaboration also included the practice of shared decision making. “Shared decision making was identified as the most frequently used method by which democracy and social justice can be integrated for student learning” (Wasonga, 2009, pg. 219).

A focus on improvement includes student achievement through assessments. “These formative assessments allowed me to identify areas of weakness for my students and then shape my classroom lessons based on what students still needed to understand,” (Bakula, 2010, pg. 43). Embedding formative assessments allows teachers to focus on student achievement throughout a unit of study. “Having some embedded formal formative assessments or reflective lessons in a curriculum is useful because it reminds teachers to reflect back on what has been learned and hopefully guide future lessons toward unit goals,” (Ayala, et al., 2008, pg. 332). Reagle (2006), also discussed focus on improvement. “This collective effort requires a comprehensive change in the school climate and encourages new systems to be developed that focus on students and best practices in teaching, learning, assessment and reporting,” (pg. 3).

Shared leadership includes reciprocity and enduring learning. “Lasting leadership was intended to be not only reciprocal and purposeful, but also to embody learning that is

a lasting, continuing facet of sustainability,” (Lambert, 2006, pg. 253). The goal of shared leadership is to build a solid foundation to improve school achievement. “When learning is continuous and participation in that learning is broad-based and skillful, high leadership capacity and the potential of sustainable, lasting school improvement result,” (Lambert, 2006, pg. 253). Printy and Marks (2006), found that principals and teachers working together is optimal for improving teaching and learning. “Best results occur in schools where principals are strong leaders who also facilitate leadership by teachers; that is, principals are active in instructional matters in concert with teachers whom they regard as professionals” (Printy & Marks, 2006, pg. 130). Shared leadership was further explored by Lindahl (2008) to clarify the importance of teacher leaders bringing the shared vision to their classroom.

Though it is clearly crucial that the formal leader prominently articulate and model the vision for a wide range of stakeholders, teacher leaders can, and should, have a strong voice in formulating the vision; they also can take leadership roles in modeling the vision in their classrooms and bringing it alive to students, parents, and peers. Teacher leaders must be included in school planning – not operational planning for administrative functions, but planning how the vision should be translated into classroom and curricular practice, and in the school culture (Lindahl, 2008, pg. 304).

Personal Practice is defined as the act of teachers sharing their strengths in a collegial environment. “An overarching PLC theme was that if one colleague was struggling, teachers were collectively responsible for supporting that teacher – in the same spirit that student learning was the responsibility of all school personnel,”

(Shernoff, et. al, 2011, pg. 469). Having a specific form of communication in order to address issues was also valuable within the literature. “Our evidence on the qualities of effective professional learning communities and of constructive problem talk, show the importance of respectful inquiry into the theories that inform teachers’ practice,” (Robinson & Timperley, 2007, pg. 259). See Table 1.1 for an overview of the current literature related to the themes of PLCs.

Table 1.1

*Most Relevant Literature*

<i>Resource</i>	<i>Variable</i>
Ayala, C. C., et al. (2008)	Focus on Improvement
Bakula, N. (2010)	Focus on Improvement
DuFour, R. (2004)	Professional Learning Communities
DuFour, R., DuFour, R., & Eaker, R. (2008)	Professional Learning Communities
DuFour, R. & Eaker, R. (1998)	Professional Learning Communities
Edmonson, et al. (2002)	Culture of Collaboration
Huffman, J. B. & Hipp, K. K. (2003).	Professional Learning Communities
Lambert, L. (2006)	Shared Leadership
Lindahl, R. (2008)	Shared Leadership
Linder, R., Post, G., & Calabrese, K. (2012)	Professional Learning Communities
Printy, S. & Marks, H. (2006)	Shared Leadership
Reagle, C. (2006)	Focus on Improvement
Richardson, J. (2011)	Professional Learning Communities
Robinson, V.J. & Timperley, H.S. (2007)	Personal Practice
Saban, J. & Wolfe, S. (2009)	Shared Vision and Mission
Shernoff, E. S., et al. (2011)	Personal Practice
Thessin, R. & Starr, J. (2011)	Professional Learning Communities
Vescio, V., Ross, D., & Adams, A. (2008).	Professional Learning Communities
Wasonga, T. A. (2009)	Culture of Collaboration
Williams, D. (2013)	Professional Learning Communities

## Methods

### *Participants*

Fulton (2009) conducted a quantitative study using a validated survey distributed to 1,200 high school teachers across New York State from schools of varying need and achievement statuses. Fulton utilized the New York State's Need/Resource Capacity to identify the level of need and then selected high and low need high and high and low achieving schools based upon the mastery percentage derived from three years of Math A scores. According to Fulton (2009), "163 high need and 120 low need schools which had three years of Math A scores (2005,2006,2007), and were identified by New York State's Need/Resource Capacity were eligible for the study," (pg. 82). "Three hundred English, mathematics, sciences, and social studies teachers from high-need / high-achieving, high-need / low achieving, low-need / high achieving, and low-need / low achieving high schools were sent a color-coded / number-coded survey called the Principal Instructional Management Rating Scale," (Fulton, 2009, pg. 82). Consent was obtained through a form letter sent to participants. Of the 173 responses that were collected and used in the data analysis, 48 were from high need and low achieving schools, 56 were from high need and high achieving schools, 38 were from low need and low achieving schools, and 31 were from low need and high achieving schools (See Table 1.2).

Table 1.2

### *Collected Responses by Achievement and Need Levels*

	<i>Low Need</i>	<i>High Need</i>
<i>Low Achieving</i>	38	48
<i>High Achieving</i>	31	56
N=173		

*Measures and Procedures*

The purpose of this study was to investigate teacher perceptions of principal's leadership behaviors through the frame of Professional Learning Communities: (1) Shared Vision and Mission, (2) Culture of Collaboration, (3) Focus on Improvement, (4) Shared Leadership, and (5) Personal Practice, and their relationship school achievement.

This quantitative study was developed using survey results collected by Dr. Fulton (2009) for his dissertation entitled *High School Principal Instructional Leadership Behavior in High and Low Need and High and Low Achievement Schools*. The survey instrument, *Principal Instructional Management Rating Scale*, was developed by Dr. Philip Hallinger (1987). Within this study, original items that were initially categorized as Job Functions were re-arranged based on the framework of Professional Learning Communities. Analysis resulted in the creation of five variables: (1) Shared Vision and Mission, (2) Culture of Collaboration, (3) Focus on Improvement, (4) Shared Leadership, and (5) Personal Practice. Shared Vision and Mission combined the Job Functions and associated items of *Framing the School Goals* and *Communicating the School Goals*. Culture of Collaboration combined the Job Functions and associated items of *Coordinate the Curriculum* and *Protect Instructional Time*. *Supervise and Evaluate Instruction* and *Monitor Student Progress* were combined to create the component of Focus on Improvement. *Maintain High Visibility* and *Provide Incentives for Learning* were combined to create Shared Leadership. Finally, Personal Practice was a combination of the Job Functions of *Provide Incentive for Teachers* and *Promote Professional Development*. A reliability analysis was conducted in order to determine the variables

that could be identified from the items in the survey, resulting in reliabilities higher than 89% (see Table 1.3).

Table 1.3

*Principal Instruction Management Rating Scale Reliability Analysis*

<i>PLC Component</i>	<i>Items</i>	<i>Number of Items</i>	<i>Cronbach's Alpha</i>
Shared Values and Mission	1,2,3,4,5,6,7,8,9,10	10	.953
Culture of Collaboration	16,17,18,19,20,26,27,28,29,30	10	.895
Focus on Improvement	11,12,13,14,15,21,22,23,24,25	10	.914
Shared Leadership	31,32,33,34,35,46,47,48,49,50	10	.918
Personal Practice	36,37,38,39,40,41,42,43,44,45	10	.927

Results

*Research Question One*

When teachers are divided into high and low-achieving schools, how do they differ in their perceptions of their principal's leadership behavior within the five components of a Professional Learning Community: (1) Shared Vision and Mission, (2) Culture of Collaboration, (3) Focus on Improvement, (4) Shared Leadership, and (5) Personal Practice? To analyze the data of research question one a *t*-test of independent means was conducted and reported on (see Table 1.4).

Table 1.4  
*Comparison of the Five Components of PLCs on Achievement*

	Low Achievement\ High Achievement	<i>N</i>	<i>M</i>	<i>SD</i>	<i>SEM</i>	<i>t</i>	<i>df</i>	<i>p</i> *
Shared Mission and Vision	Low Achieving	83	32.99	10.50	1.15	-1.37	167	0.17
	High Achieving	86	35.17	10.20	1.10			
Collaborative Culture	Low Achieving	84	31.42	9.09	0.99	-0.84	165	0.40
	High Achieving	83	32.63	9.53	1.05			
Focus on Improvement	Low Achieving	85	29.32	9.68	1.05	-1.20	166	0.23
	High Achieving	83	31.18	10.48	1.15			
Shared Leadership	Low Achieving	81	28.02	9.62	1.07	-1.71	158	0.09
	High Achieving	79	30.70	10.19	1.15			
Personal Practice	Low Achieving	83	26.24	9.21	1.01	-3.10	162	0.00
	High Achieving	81	31.05	10.63	1.18			

*\*p < 0.05 equals statistical significance*

A *t*-test of independent means was conducted to understand how teachers differ in their perceptions of their principal’s leadership behavior, when divided into high and low-achieving schools, across all variables, the mean scores were higher for high achieving schools (See Table 1.4). This suggests that teacher perceptions of the principal’s leadership behavior are stronger in schools that are high achieving.

For the variables of Shared Vision and Mission, Culture of Collaboration, Focus on Improvement, and Shared Leadership, the score was above .05, the top row of data was used to test Levene’s test for Equality. In all of the above cases, these data were not statistically significant, indicating that teacher perceptions of those factors did not differ significantly between high and low-achieving schools. For Personal Practice, Levene’s Test for Equality of Variances was also above .05, and the top row of data was used. For Personal Practice, there was statistical significance, indicating that teacher perceptions of

Comment [M1]: Identify variable

Personal Practice ( $M_L = 26.24$ ,  $M_H = 31.05$ ,  $SD_L = 9.21$ ,  $SD_H = 10.63$ ) were higher in high achieving schools. Although not statistically significant, teachers perceptions of Shared Leadership ( $M_L = 28.08$ ,  $M_H = 30.70$ ,  $SD_L = 9.62$ ,  $SD_H = 10.19$ ) were also higher in high achieving schools.

#### *Research Question Two*

Which of following components of a Professional Learning Community: ((1) Shared Vision and Mission, (2) Culture of Collaboration, (3) Focus on Improvement, (4) Shared Leadership, and (5) Personal Practice, predicted school achievement? Research question two was analyzed using a logistic regression and a path analysis.

A correlation analysis was performed and between the five components of PLCs and school achievement. When teachers were divided into high- and low-achieving schools, teacher perceptions of their principal's leadership behaviors were analyzed in relationship to the five components of a Professional Learning Community by using a Pearson Product Moment Correlation. There is a positive and significant relationship between Personal Practice and school achievement, indicating that schools where teachers perceive Personal Practice as a principal leadership behavior have higher achievement. All of the interrelationships between each of the five variables (1) Shared Vision and Mission, (2) Culture of Collaboration, (3) Focus on Improvement, (4) Shared Leadership, and (5) Personal Practice, are strong, positive relationships that are statistically significant. This suggests that all of the variables are related in the framework of PLCs (See Table 1.5).

Table 1.5

Correlation between Achievement and Perceptions of PLC Components

		Low Achievement / High Achievement	Shared Vision and Mission	Culture of Collaboration	Focus on Improvement	Shared Leadership	Personal Practice
Low Achievement / High Achievement	r	1					
	p						
	N	173					
Shared Vision and Mission	r	.106	1				
	p	.172					
	N	169	169				
Culture of Collaboration	r	.065	.789**	1			
	p	.402	.000				
	N	167	164	167			
Focus on Improvement	r	.093	.825**	.826**	1		
	p	.233	.000	.000			
	N	168	165	164	168		
Shared Leadership	r	.134	.771**	.762**	.820**	1	
	p	.090	.000	.000	.000		
	N	160	159	157	156	160	
Personal Practice	r	.237**	.720**	.758**	.783**	.852**	1
	p	.002	.000	.000	.000	.000	
	N	164	162	158	159	156	164

\*\* indicates  $p < 0.05$  equals statistical significance

A logistic regression was applied and confirmed that Personal Practice was the major predictor of school achievement, followed by Focus on Improvement (see Table 1.6).

**Table 1.6**

*Logistic Regression*

		B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1 <sup>a</sup>	Personal Practice	0.039	0.017	5.435	1	0.02	1.04
	Constant	-1.199	0.503	5.677	1	0.017	0.302
Step 2 <sup>b</sup>	Focus on Improvement	-0.057	0.028	4.015	1	0.045	0.945
	Personal Practice	0.084	0.028	8.674	1	0.003	1.087
	Constant	-0.766	0.543	1.989	1	0.158	0.465

a. Variable(s) entered on step 1: Personal Practice.

b. Variable(s) entered on step 2: Focus on Improvement.

A path analysis was designed utilizing Personal Practice as the dependent variable (Figure 1). The variables of Shared Vision and Mission, Culture of Collaboration, Focus on Improvement, and Shared Leadership were factors in the model. All relationships between the factors were positive and strong  $r$  ( $r = .76$  to  $.83$ ). Figure 1 shows that Shared Leadership had the strongest predictive impact on Personal Practices. The second highest predictor is Collaborative Culture, followed by Focus on Improvement. All three variables accounted for 76% of the variance of Personal Practice. Shared Vision and Mission, although not in the regression, correlated highly with other variables, as shown in Figure 1.

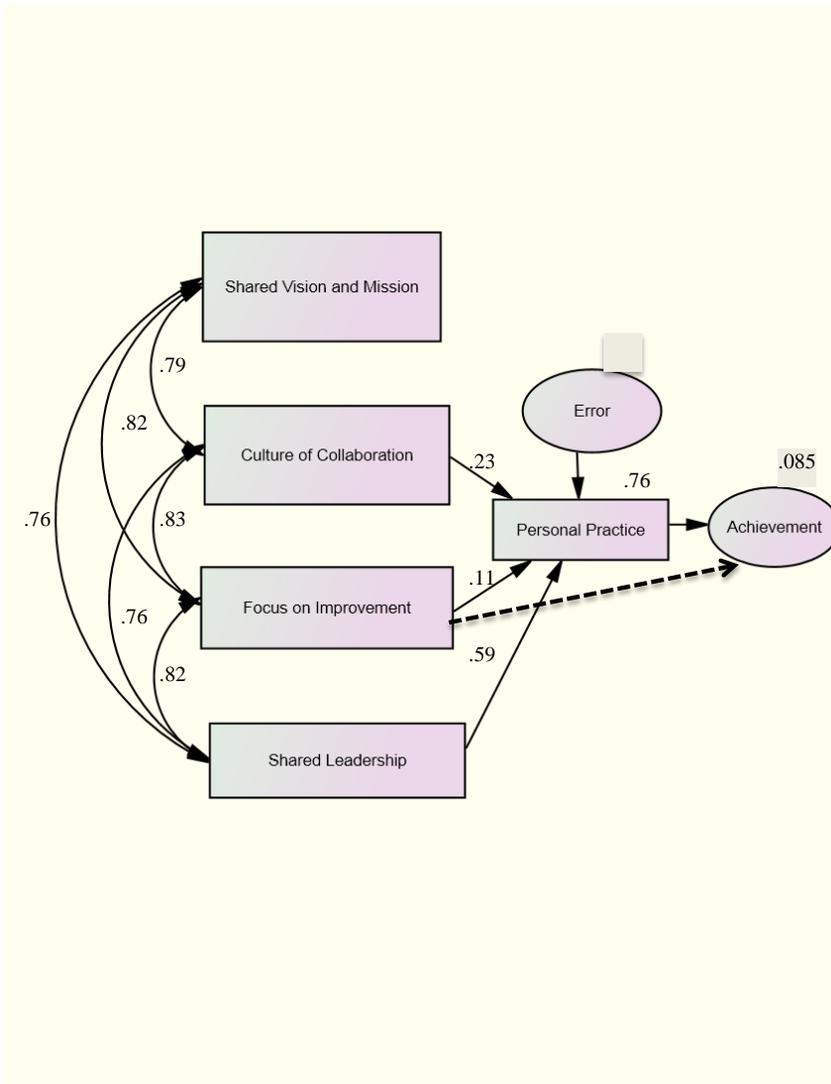


Figure 1 Path Analysis

### Discussion and Implications

The five variables of PLCs that were examined were: (1) Shared Vision and Mission, (2) Culture of Collaboration, (3) Focus on Improvement, (4) Shared Leadership, and (5) Personal Practice. Based upon our findings, Personal Practice had the greatest influence on student achievement. Shared Vision and Mission, Culture of Collaboration, Focus on Improvement, and Shared Leadership interrelate with each other. Personal Practice was selected as a mediator to evaluate how other variables relate with achievement. By examining the teacher perceptions of principal's leadership behaviors, we were able to better understand the elements of PLCs and their effect on student achievement.

The cornerstone of the PLC model shifts focus from teaching to student learning. Our findings align with Linder, et al. (2012), as he found that shared personal practice is a key part of PLC. While all of the variables are interconnected, the suggestion is that focus on personal practice can be connected with high student achievement.

In contrast, we did not find a direct relationship between achievement and three other variables of PLC, as Williams (2013) did. However, looking further, we prepared a path analysis showing that indeed Personal Practice can play a mediator role of the other variables to predict achievement.

Based on our findings, we strongly recommend professional development in Personal Practice to begin the process of developing PLCs, especially in school districts with limited budgets. One limitation is the lack of input from the principal's perspectives of their own leadership behaviors. We would recommend surveying the principals to see if their intended leadership behaviors are aligned with the perceptions of the teachers.

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## **Collaboration in Inclusive Schools in Saudi Arabia: Recommendations for Policy and Best Practices**

Equal learning opportunities and high quality education are right for all students. Many students with disabilities are not receiving the services they need in inclusive classrooms because of the lack of collaboration between general and special education service providers. Collaboration among educators is a critical for successful implementation for all education programs, especially special education programs, in inclusive classrooms. When general education teachers, special education teachers, and other service providers work separately and do not have the efficient skills to work collaboratively to address and meet the needs of students with disabilities/at risk in inclusive classrooms, the gap between students with and without disabilities will widen.

In Saudi Arabia, there is a lack of using collaborative practices among Saudi educators in inclusive schools. Implementation of this essential approach will lead to a large, positive difference in students' outcomes (Lingo, Barton-Arwood, & Jolivette, 2011 and Garderen, Stormont, & Goel, 2012). Successful collaboration will benefit all students, families, and school personnel.

The ultimate goal of inclusion will be achieved by implementing the best collaborative practices that are research-based. Describing the best collaborative practices will help the practitioners to understand the nature of these practices and implement them with accuracy. Saudi policy makers in education should consider effective collaboration as a critical tool to developing and implementing any special education program in order to close the gap between all students in inclusive classrooms. This presentation is beneficial for any global education system that applies inclusion.

Designing healthy and effective school environments for all students needs collective efforts. These efforts will help to gain the ultimate goals of successful inclusion and overall education for all students. As an introduction for this presentation, I will present the current view of inclusive schools and the nature of collaboration among educators in these schools in Saudi Arabia. I intend to persuade educational policy makers and educators that implementing successful collaborative practices in inclusive schools is critical. I will demonstrate several research studies that indicate the effectiveness of collaboration between special education teachers and other educators. Such collaboration will (a) improve inclusion in schools, (b) increase the quality of provided services for special education students, (c) develop and apply special education programs effectively, (d) address and meet all students' needs, and (E) enhance special education students' achievements. I will identify and describe some of the best practices of effective collaboration that are research based.

# **L2 Data-Driven Learning**

## **with a Free Web-Based Bilingual Concordancer**

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### **Abstract**

Data-Driven Learning (DDL), or the use of corpora and concordancing tools in second language (L2) classrooms, is expanding globally. In this study, we investigated the effectiveness of DDL for understanding targeted language usage in an L2 university classroom using a new web-based, Japanese-English bilingual concordance tool. Students followed instructions on worksheets to search and observe keywords in a newspaper corpus, shared their observations in paired and class groups, and applied their understanding to production activities. Efficacy was measured by pre- and post-test scores, students' notes, and questionnaire responses. The results indicate that the DDL tasks using worksheets in a five-step teaching procedure was effective for learning the identified language items, and for fostering L2 learners' perspectives toward L2 language rules and patterns. The feedback from students was positive.

### **1. Introduction**

Using data in language teaching is called Data-Driven Learning (DDL). DDL is implemented in pedagogical settings with a concordancer, which is a search software, and a corpus, which is a body of language data. Using a concordancer, a targeted word can be viewed in a variety of contexts (shown as partial sentences) called concordance lines, which are extracted from the corpus. The target word, or keyword in context (KWIC), is aligned in the center of the computer screen. The screenshot in Figure 1 shows concordance lines for the KWIC *issue*. In this figure, words to the left and right of the KWIC can be sorted and highlighted to more easily view various

language forms such as articles, determiners, common clusters and common pre and post modifiers. In the example shown, we can easily understand that *issue* can be used as a noun (e.g., *the key issue*) and a verb (e.g., *issue bonds*); and that adjectives such as *crucial*, *latest*, *major* and *pending* modify *issue*. The noun form of *issue* is followed by verbs such as *was*, *is*, *may be*, *requires*, *would be*, *cannot be*, *arises* and *dropped*.

tariffs and Trade would become more of an **issue** because of the necessity of incorporating China into  
 Another **issue** was whether to separate the administration of fiscal  
 (OSS) trade talks, including the **autoparts issue** in the mid-1980s.  
 consultation fail, the local government **can issue bonds** but must have a vote in their  
 Indonesia said he believes the national **car issue** may be Indonesia's way of spurring Japanese automakers  
 r house seats is the most hotly **contested issue** among the three parties.  
 Since the Security Council **issue** is an important matter for the country, the  
 While some **countries issue warnings** for residents to avoid prolonged exposure to  
 The most **crucial issue** is maintaining confidence in the U.S. dollar as  
 Every **issue requires** debate and serious deliberation.  
 The **first issue** is how to ensure a cooperative relationship between  
 low Cabinet made its proposal on the **flag issue** and the executive body of the SDPJ now  
 The Constitution is a **fundamental issue** for politicians and political parties.  
 This is a more **fundamental issue** than whether contamination has caused damage to the  
 t to public criticism for using the **jusen issue** for partisan purposes.  
 use air power is immaterial since the **key issue** for the survival of the urban (largely Muslim)  
 inister's official residence that the **key issue** would be the economy, adding that his government  
 The **latest issue** of the quarterly "Mintetsu" by the Japan Non-Government  
 ficient collateral for the loans, a **major issue** in the case.  
 by contemporary youths represent a **major issue** to be debated during the campaign for the  
 This is a crisis **management issue** for Japan's financial system and one that also  
 commercial institution because it does **not issue** currency or function as a central bank.  
 ation talks with Japan has been a **pending issue** since the Bush administration was inaugurated in January  
 as deliberated over the taxation **revision issue** only during a limited period at year's end.  
 t the Japanese feel deeply about the **rice issue** cannot be denied.  
 Murayama mentioned the human **rights issue** only in his speech at a dinner hosted  
 The government **should issue** more national bonds to siphon off excess savings  
 s U.S. administration is expected to **soon issue** a sanctions list against Japan on the basis  
 year's defense white paper addressed **that issue** for the first time.  
 ging to study nontariff barriers when **the issue** arises.  
 ation and expression, should consider **the issue** as a problem the industry should solve on  
 ch 5, and is promoting discussions on **the issue** both within and outside the party.  
 the ministry would be able to discuss **the issue** cogently.  
 However, **the issue** **dropped** 8.7 percentage points to 30 percent, or

Figure 1 View of a Corpus Search for the Keyword *Issue*

In using corpora and concordance tools, learners become “language detectives” by observing and finding rules of language and vocabulary usage by themselves (Johns, 1997, p.101). In this way, it is inductive, learner-centered, promotes “noticing,” and fosters student autonomy (Braun, 2005; Huang, 2008; Hunston, 2002; O’Keeffe, McCarthy & Carter, 2007). Furthermore, students can observe ample authentic language data that they cannot access in English textbooks.

However, as can be seen from Figure 1, although there are benefits to using this kind of text analysis, two main problems are the complexity of the language in the authentic text (Boulton, 2009), and the potentially complex use of concordancers (Nishigaki, Kijima, Chujo & Oghigian, 2010). Before the availability of *WebParaNews*, to use a bilingual concordancer in class, the instructor would need to purchase the software and prepare corpora in the L1 and L2; and students would need to learn to use the bilingual concordancer, including how to adjust settings and upload an L1 corpus and then an L2 corpus. (For more information on the relative merits of other available corpora, see Oghigian & Chujo, 2010). *WebParaNew* was used to reduce the difficulty and complexity of using this type of tool. It contains an English and Japanese bilingual corpus based on a *Daily Yomiuri* newspaper corpus, and uses a search program that works like a simple Google search which can be viewed with a browser such as Internet Explorer, Firefox, Chrome, or Safari. No initial settings are needed, so searches can be done immediately. It displays English concordance lines with corresponding L1 (Japanese) translations. When a target word is typed in, it displays English concordance lines with corresponding L1 (Japanese) translations (Figure 2). The L1 translation allows the students to confirm the meaning of the concordance lines so that they can focus on the language rules. Thus, the L1 translation reduces the learning burden. *WebParaNews* was released by the project the authors involved (Chujo, Anthony & Nishigaki, 2012).

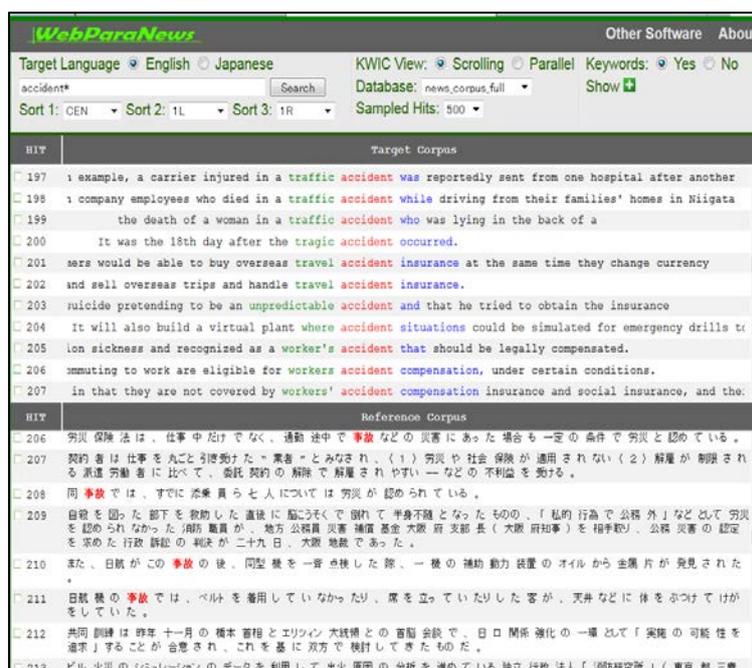


Figure 2 Search Results Using *WebParaNews*

In this study, *WebParaNews* was implemented in an L2 classroom with aims to verify if it can be used effectively in an L2 class, and to investigate what and how students learn with *WebParaNews*. The research questions (RQ) addressed for this study were:

RQ1: Is *WebParaNews* an effective tool for learning targeted language items in a university L2 class?

RQ2: Does using *WebParaNews* help students foster their perspectives on L2 rules?

RQ3: Do Japanese learners in this study view the tasks and tool (*WebParaNews*) favorably?

RQ4: How does using *WebParaNews* help students as language learning tool?

## **2. Methodology**

### **(1) Participants**

The participants were 12 university students, five male and seven female students, attending a TESOL class in a teachers' training program at a Japanese university. Their first language was Japanese. Their average TOEFL ITP score was 522, ranging from 450 to 583.

### **(2) DDL Instruction**

In each 90-minute class, the participants worked with *WebParaNews* for about 30 minutes to learn the target language items. The DDL instruction was based on sequential activities with five steps: (1) warm-up, (2) observation, (3) share, (4) understand, and (5) use. In the *warm-up* stage, students took quizzes to self-evaluate their current level of knowledge about the target words. Next, in the *observation* stage, they studied concordance lines independently and wrote down what they found on a worksheet. (An example worksheet is shown in Figure 3.) In the *share* activity, students shared their findings first with a partner and later in class. In the *understand* activity, the teacher summarized the class discussion and gave an explicit explanation of the target words in order to confirm or correct students' hypotheses on the targeted language items. In the *use* activity, students applied their acquired knowledge and worked on production such as creating sentences or conversations using the target words.

### **(3) Targeted Language Items**

The participants worked with *WebParaNews* for ten weeks. In Table 1, the targeted keywords in context are shown in italics. An example worksheet is shown in Figure 3.

Table 1 Target Items Learned in Class

Class	Target Language Items	Class	Target Language Items
1	use of <i>U.S. &amp; America</i>	6	varieties of meanings of <i>charge</i>
2	varieties of meanings of <i>bear</i>	7	<i>accident, incident &amp; event</i>
3	<i>early, fast, rapid &amp; quick</i>	8	varieties of meanings of <i>practice</i>
4	<i>cross &amp; across</i>	9	<i>It is + adj. + that + S+V</i>
5	<i>everyday &amp; every day</i>	10	positions of <i>always</i>

**accident, incident & event**

**Warm-up.**  
 Fill in the blanks using 1) accident, 2) event, or 3) incident and make a proper English sentences. . .

aircraft _____.	sarin poisoning _____.	travel _____.
annual _____.	sporting _____.	the World Cup _____.
Aum _____.	spy ship _____.	Olympic _____.
epoch-making _____.	Tiananmen Square _____.	shooting _____.
historical _____.	the 1970 Yodo _____.	bullying _____.
nuclear _____.	traffic _____.	

**Observation.**  
 Look up the three key words; 1) accident, 2) event, and 3) incident. Observe the words that follow each key word. . .  
 Sort1: CENTER Sort2: 1L Sort3: 2L KWIC View: Scrolling Keywords: Yes Sampled Hits: 500 . .

<b>accident</b> 例 car accident 自動車事故 . . <div style="border: 1px solid black; height: 100px; width: 100%; margin-top: 5px;"></div>	<b>incident</b> <div style="border: 1px solid black; height: 100px; width: 100%; margin-top: 5px;"></div>	<b>event</b> . . <div style="border: 1px solid black; height: 100px; width: 100%; margin-top: 5px;"></div>
--	--	---

What is the most frequently used Japanese translation for *accident*? \_\_\_\_\_  
 What is the most frequently used Japanese translation for *event*? \_\_\_\_\_  
 What is the most frequently used Japanese translation for *incident*? \_\_\_\_\_

Observe the words that come after the key words, and take memos on what you notice. . .  
 ex. "Incident" is often followed by a verb "occur". . .

**Share.**  
 Summarize differences of the meanings of accident, incident, and event. . .

accident \_\_\_\_\_  
 event \_\_\_\_\_  
 incident \_\_\_\_\_

**Use.**  
 Make sentences using accident, incident, and event. . .

Figure 3 Example Worksheet  
 (The original instructions were in Japanese.)

#### (4) Evaluation

The effectiveness of the DDL material and instruction was evaluated by pre- and post-tests, a questionnaire, and notes taken by students on their worksheets. The pre- and post-tests contained 65 questions; half of the post-test was administered a week after the DDL instruction, and the remaining questions were administered two weeks later. The pre- and post-tests were identical. The types of questions were 27 multiple choice questions; 10 partial translations into L1; 20 partial translations into English; and eight questions to correct incorrect English sentences. The instructor collected the worksheets after class, made copies and returned them to the students. The notes made on the worksheets by the students were then analyzed. The questionnaire consisted of five-point Likert-scale questions, and open-ended comments.

### 3. Results and Discussion

#### 3.1 Pre- and Post-tests

The results of descriptive statistics, the gain between the pre- and post-test, the  $p$ -value, and the effect size are shown in Table 2. Since the number of participants was twelve, a non-parametric statistical test, the Wilcoxon signed-rank test, was administered. As a result, the gain between the pre- and post-tests was statistically significant ( $Z = -3.06$ ,  $p = .002$ ,  $r = -.63$ ). The effect size was  $r = .63$  and was “large”. Since the increase of the score before and after DDL instruction was verified, we can say that DDL was effective in this setting for increasing the participants’ L2 knowledge of the targeted items. Thus, we concluded that the answer for RQ1 is yes.

Table 2 Results of Descriptive Statistics ( $n = 12$ )

	Pre-test	Post-test	Gain	$p$ -value	Effect Size
Mean	43.73	73.86	30.13	$p = .002$	$r = -.63$
SD	11.74	9.08			

#### 3.2 Worksheets

In class, students used *WebParaNews* with a worksheet that the instructor created for each target language item. On the worksheets, students wrote what they found from *WebParaNews*. Figure 4 shows an example of notes that a student took on a worksheet in class. The ideas from her partner and the class were added with a red pen.

**accident, incident, event の使い分け**

**Observation**  
 ① accident, event, incident を調べ、それぞれの語の左に来る語を観察して気づいたことを書きましょう。  
 Sort1: CENTER Sort2: 1L Sort3: 2L KWIC View: Scrolling Keywords: Yes Sampled Hits: 500

accident	incident	event
例 car accident 自動車事故 1989 accident: 1989年の事故 aircraft accident: 航空事故 criticality accident: 臨界事故 labor accident: 労働災害 nuclear accident: 原子力事故 plant accident: 原発事故 traffic accident: 交通事故 ground accident: 地上事故 latest accident: 最新の事故 hit and run accident: 逃げた事故	1989 incident: 1989年の事件 curry incident: カレー事件 Noda incident: ノダ事件 ship incident: 船舶事件 poisoning incident: 毒物犯罪 smuggling incident: 密輸事件 tragic incident: 痛ましい事件 shocking incident: 衝撃的出来事 large-scale incident: 大規模な事件 important incident: 重要な事件	annual event: 年次行事 anniversary event: 周年行事 athletic event: (スポーツ)大会 cultural event: 文化行事 criticality event: 臨界事故 epoch making event: 画期的出来事 specific event: 特定の出来事 historic event: 歴史的出来事 unusual event: 異例 regular event: 正統派

accident の日本語訳で多いものはなんですか。 事故, (災害)  
 incident の日本語訳で多いものはなんですか。 事件, (犯罪)  
 event の日本語訳で多いものはなんですか。 行事, 事件, 出来事

② 右に来る語を観察して気づいた事を何でも書いてください。  
 例 右の語には、目を引くものがある。この2つの単語は、よく似た意味を持つ。事故現場は accident site と書く。  
 incident の動詞は occur が多い。 事故現場は accident site と書く。

accident は、人の意思による(多量)被害を伴ったもの。 → caused by fire / in a fire / in a car accident  
 ↳ 機能的な事故や天災の影響による二次的な事故。突発的。人間のコントロールが難しい。

incident は、人の意思の関与が不明な場合。 → 国境を越える / 国境を越える / 国境を越える / 国境を越える  
 ↳ 人がおこなった事件。犯罪に使われることが多い。 → 国境を越える!!

event は、事件。事象の発生を "thing" の発生に由来。 → thing が物や物事の発生を意味する。  
 ↳ 事件や出来事。行事や祭りの、人がおこなったもの。 → 国境を越える / 国境を越える / 国境を越える / 国境を越える

まとめ accident, event, incident の意味の違いと用法の違いをまとめよう。

accident は、人に起因する / in/at が多い / caused by がよく使われる → 原因を追求する / 原因を追究する  
 ↳ 長期的に決まっていること?

event は、人に起因する / held (開催) がよく使われる → 人が開催しているから

incident は、国境を越える / 国境を越える / 国境を越える / 国境を越える / 国境を越える / 国境を越える / 国境を越える / 国境を越える

Figure 4 Example of a Student's Notes

When we look at the notes on the worksheets, we can see what students found in the concordance lines and how they formulated language rules. Samples of the findings that students wrote on notes are shown with the target language items in Table 3. *Incident*, *accident*, and *event* were chosen as target words because their concepts and translations are similar, but meanings and usages are not, and therefore are confusing for Japanese students. Similarly, since both *America* and *U.S.* are translated as “Amerika” or “Amerika-no” in Japanese, Japanese students are likely to use *America* or *American* in contexts phrases where *U.S.* should be used. They often do not distinguish between *America* and *U.S.* A sample of these findings is shown in Table 4.

Table 3 Student Findings for *Incident, Accident, and Event*

Student Findings for <i>incident, accident, and event</i>
<ul style="list-style-type: none"> <li>◆ an <i>accident</i> happened unexpectedly</li> <li>◆ an <i>accident</i> is an unfortunate matter</li> <li>◆ an <i>incident</i> was planned</li> <li>◆ an <i>incident</i> occurred intentionally</li> <li>◆ an <i>event</i> was often fun and interesting</li> <li>◆ an <i>event</i> was planned in advance</li> <li>◆ the verbs frequently used with <i>accident</i> and <i>incident</i> were <i>occur</i> and <i>take place</i></li> <li>◆ a specifying name frequently came before <i>incident</i> such as <i>the Matsumoto poisoning incident</i></li> <li>◆ an <i>event</i> was often used as a phrase such as <i>in the event of...</i> and <i>in the event that...</i></li> </ul>

Table 4 Student Findings for *U.S. and America*

Student Findings for <i>U.S. and America</i>
<ul style="list-style-type: none"> <li>◆ <i>America</i> refers to a part of a continent</li> <li>◆ <i>America</i> refers to a place such as North America or Latin America</li> <li>◆ <i>U.S.</i> is used to talk about the United States of America</li> <li>◆ <i>U.S.</i> refers to a country</li> <li>◆ <i>U.S.</i> is used as an adjective such as U.S. government</li> <li>◆ <i>U.S.</i> means a country, not an area</li> <li>◆ <i>U.S.</i> often relates with government thing</li> <li>◆ <i>U.S.</i> is often followed by a noun</li> </ul>

A third example of a student's findings is shown in Figure 5. In class, students looked at what words fit the pattern "It is A that...", listed those words found from a *WebParaNews* search, and categorized them using their own ideas. This student categorized the words for A of "It is A that..." as 1) possibility (e.g., *possible, probable*), 2) presumption (e.g., *assumed, believed...*), 3) decision (e.g., *decided, determined*), 4) tangibility (e.g., *certain, clear, ...*) 5) necessity (e.g., *essential, inevitable...*) 6) hope (e.g., *desirable, hoped*), 7) unfortunate (*unfortunate, regrettable*), and 8) worry (*doubtful, feared*). (Category names were translated by the authors.)

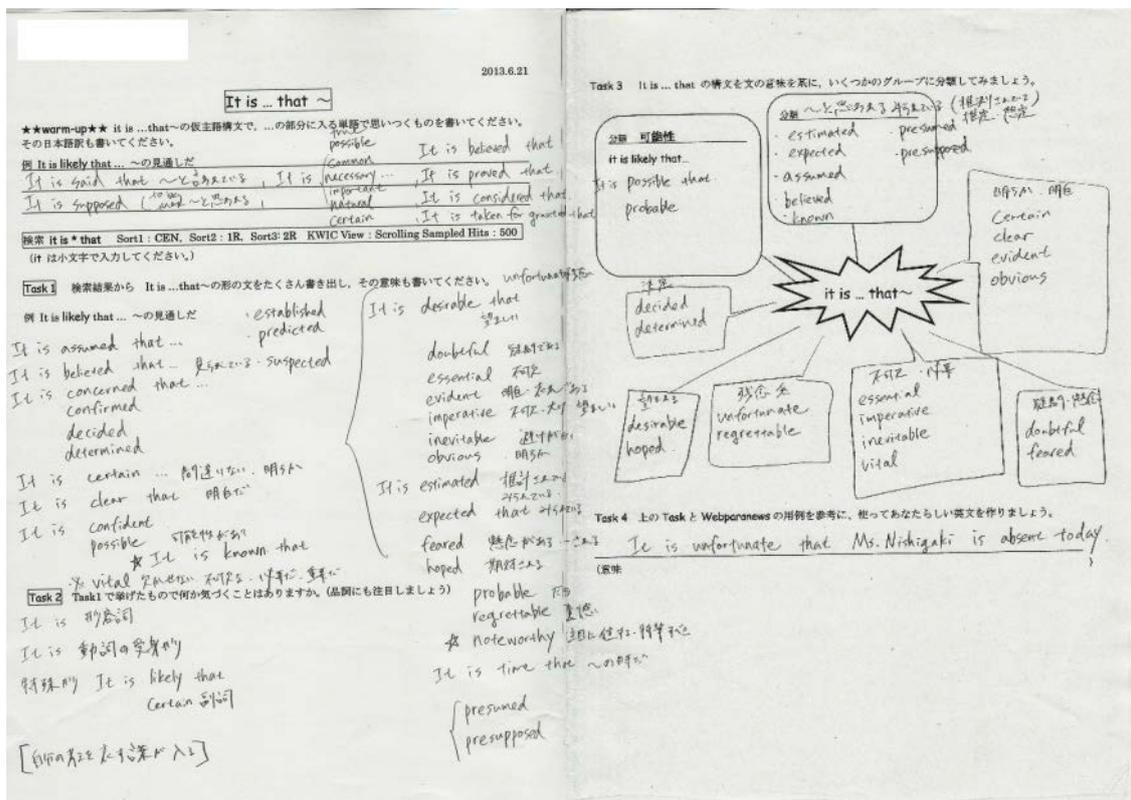


Figure 5 Example of a Student's Categorization of "It is \_ that..."

From the observation of students' notes written on worksheets, we understood that students found rules by themselves, and expanded their learning through pair-work and group work. Thus, we can say that DDL in this setting extends students' viewpoints on L2, fostering their autonomy as an independent L2 learners. Therefore, we concluded that the answer for R2 is yes.

### 3.3 Questionnaire

#### (1) Five-point Likert Scale

The first question on the questionnaire was about *WebParaNews*. In looking at the 5-point Likert score results in Table 5, we can say that students found *WebParaNews* interesting, and useful for learning a language and for fostering language knowledge. However, the score for "memory" is not as high as other items (3.9). Some review activities or production activities to consolidate the learned material could be added to improve this aspect.

Table 5 The Use of WebParaNews

Questions	Score
WPN is interesting.	4.3
WPN is useful for learning a language.	4.4
WPN is good to foster the perspectives of language learning.	4.3
The target item looked up in WPN is memorable.	3.9

5: I agree very much. 4: I agree to some extent. 3: Neither.  
2: I don't agree to some extent. 1: I don't agree at all.

For the second question, students addressed questions about the number of tasks and length of time needed to do the DDL exercises using *WebParaNews*. From Table 6, we can say that the time and the number of tasks used for DDL are mostly appropriate. From the results shown in Table 5 and 6, we concluded the answer to RQ 3 is yes.

Table 6 The Activities in DDL

Questions	Score
Time Used for DDL (1 too long 3 appropriate 5 too short)	2.8
Number of Tasks (1 too much 3 appropriate 5 too little)	2.5

For the third question, students compared *WebParaNews* to an electronic dictionary (DIC in Table 7) and answered each question using a 5-point Likert scale. We can see that students thought that *WebParaNews* was useful, showing many examples and providing authentic and interesting examples. On the other hand, we can see that students thought that electronic dictionaries were easy and convenient to use, and students could look up the targets items quickly. Thus, we concluded for RQ4 that *WebParaNews* has its own benefits as an L2 learning tool, and complements electronic dictionaries.

Table 7 Comparison between WebParaNews and Electronic Dictionary  
WPN: *WebParaNews* DIC: Electronic Dictionary

Questions	WPN	DIC
It is useful for learning a foreign language.	4.7	4.3
It shows many examples.	4.6	2.8
I can find and notice about words and language rules.	4.4	3.8
The example sentences are authentic and interesting.	4.1	3.0
I can look up a target item quickly.	3.8	4.3
It is easy to use.	3.5	4.2
It is convenient to use.	3.5	3.9

5: I agree very much. 4: I agree to some extent. 3: Neither.  
2: I don't agree to some extent. 1: I don't agree at all.

## (2) Open-ended comments

Examples of comments expressed on the questionnaire are shown in Table 8. From these comments, we can say that the students liked *WebParaNews* as an English learning tool. Therefore, we can say that the answer of RQ 1 is yes. Regarding RQ4, we conclude that *WebParaNews* gives ample and authentic English example sentences to the students and can complement electronic dictionaries.

Table 8. Sample Comments from Student Questionnaires

Comments
Searching words and observing meanings and usages was interesting and fun.
I liked <i>WebParaNews</i> very much. I was amazed by and liked this new way of language learning.
The data given by <i>WebParaNews</i> shows me things clearly.
I learned various meanings and usages of English words and realized I need to learn English more broadly and deeply.
When I shared ideas about a target word with my partner and class, I deepened my ideas.
The language data shown by <i>WebParaNews</i> made me certain about language rules.
If the concordance lines were arranged in the order of frequency, it will be easier to find rules.

## 4. Conclusion

DDL tasks targeting ten specific language items were provided on worksheets to participants who used *WebParaNews* to find and observe language rules. The teaching procedure included warm-up, observe, share, understand and use aspects, and employed individual, paired, and class work. In this study, pre- and post-test scores indicate that this method was effective. Student comments on questionnaires indicate that using a corpus was helpful with regard to finding numerous examples that were authentic and interesting and in broadening their understanding of language rules; students also indicated that *WebParaNews* complements electronic dictionaries as a language tool although an electronic dictionary was faster and more convenient when just seeking a definition. Further improvements to this type of classroom implementation would include more review and productive activities. It is hoped that this research provides teachers with ideas on how to implement DDL in L2 classrooms using *WebParaNews*.

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## Three Men and a Maybe: Identity and Privilege in Male Preservice Elementary School Teachers

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### **Abstract**

Male preservice elementary teachers often receive special attention. However, hybrid identities consist of many complex components. Constant-comparative methodology revealed emergent themes of privilege and disadvantage linked to gender, religion, and ethnicity in this exploratory examination of the stories of three male preservice elementary teachers. The men demonstrated varying levels of awareness of their hybrid identities and the associated privileges and disadvantages. All three men found privileges and disadvantages related to their gender, but members of religious and ethnic minority groups perceived significant disadvantages of those aspects of their identities. Findings suggest that preservice teachers' identities are more complex than gender alone, that being in multiple minority groups may compound challenges for preservice teachers, and that current teacher training may not sufficiently address issues of hybrid identity.

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Presentation Format: Paper Session  
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Some alarming numbers have been published in academia and in the media that reinforce the perception that plagiarism is a widespread and urgent problem (e.g., Briggs, 2009). Yet, as recently as February, 2010, it was reported that the actual prevalence of plagiarism is unknown, as most data come from self-reports (Walker, 2010). More research needs to explore student understanding as well as actual behaviour. This project explores the potential extent of accidental plagiarism by assessing Canadian distance education students' knowledge of plagiarism. Four pieces of evidence are analyzed: (1) students' attempts to select plagiarised passages from a number of choices; (2) paraphrases these students produced; (3) results from a simple exercise aiming to improve plagiarism understanding; (4) the types of errors made in identifying and writing paraphrases.

One way to test whether students understand plagiarism is to have them identify which of several passages is or is not plagiarized. Several researchers have done this, and most found undergraduate students did rather poorly (Jones, 2011; Roig, 1997). In contrast, Hale (1987) found "only 11% of the total judgments were instances where students believed a passage was honest when it was plagiarized" (p. 68) and argued that his results demonstrated that inadvertent plagiarism is unlikely. However, 11% of the student body can be a large number of individuals!

Overall, the literature indicates that a large proportion of students genuinely do not recognize plagiarism and do not fully understand what it is. Therefore they likely do not plagiarize on purpose.

There have been several attempts to prevent plagiarism; some more effective than others. A few found that students who received instruction later plagiarised less than those without instruction, but still continued to commit plagiarised acts (e.g., Jocoy & Dibiase, 2006). Walker (2008) was partially successful in uncovering the types of errors students made by creating a coding system to detect different types of plagiarised text:

"1) word strings, that is lifting exact phrases consisting of five-to-nine words from the original 2) substitutions, modifying the original text by using one to two synonyms; 3) additions, including one-to- two new words to the original 4) deletions, eliminating one-to-four words from the original; and, 5) reversals, rearranging sentence order or interchanging phrases." (p.390).

She found that training a randomly selected group of 19 students to paraphrase properly significantly reduced all five types of plagiarism in comparison to a control group of 17 students, although there was no difference in use of word strings for a second, lengthier passage. The fact that students benefitted from this training suggests that they may be uninformed about plagiarism, but can learn with intervention. It seems that more research is needed to determine the circumstances in which training is useful and perhaps the types of training that suit particular audiences.

Because insufficient research exists on the topic of accidental plagiarism, the present study assesses whether two different groups of university students recognize plagiarised work in which wording from the original had been changed in various ways. One of these groups received feedback on their recognition attempts and then were asked to paraphrase a passage. The prediction is that with feedback and practice, this group should improve over time. It is also expected that this improvement will transfer to their attempt to paraphrase a passage. A second group of more diverse students was tested to see if the results generalize. The types of errors made, based on Walker's (2008) definitions, will be assessed for descriptive purposes, but no hypotheses are offered.

## ***Method***

### ***Participants***

Eighty-five percent of 497 students (N=420) who registered in the Psychology of Adolescence course from August 8, 2007 to November 9, 2010 completed all five course quizzes and are included in this report. This study analyzed the data obtained from the questions about plagiarism. The university's Research Ethics Board provided permission to use student data for the purposes of the present study. The majority of students (87%) was female with a mean age of 29. Most (44%) lived in Alberta, and 2.2% were international students. The remainder lived in other Canadian provinces or territories.

A second group of participants from the same university received a different set of scenarios. This group consisted of undergraduate (N=125; 71% female) and graduate students (N=103; 73% female) from Arts, Business, Communications, Journalism, Nursing, Allied Health Studies, Math, Science, Social Sciences, and Interdisciplinary Studies. The undergraduate students were spread roughly equivalently across the four years of university and all students were taking at least one course online at a distance.

### ***Procedure***

The course was online, taken at a distance. Built into the course is a series of five quizzes, each consisting of 15 multiple choice questions and five short answer questions. Students read a portion of their textbook and study guide, and then took a quiz before proceeding to the next readings. Most quiz questions were related to course content, but for the first four quizzes, one multiple choice question from each involved recognizing plagiarism. For this question, a passage from the textbook was presented. Students were asked to select one of four options that did or did not represent plagiarism of that passage. Because students receive feedback from the markers, the aim was to teach students to recognize plagiarism so they would not engage in it in the essay they needed to write later in the course. It was expected that the markers' feedback

would increase students' awareness of plagiarism so that their ability to recognize it would improve throughout the course.

For the second task, students were selected from throughout the university rather than from a single course. All four multiple choice scenarios included a proper citation. Three scenarios asked students to identify the correct paraphrase from a number of options. One further scenario asked students to identify what was wrong with a paraphrased passage.

## **Results**

Slightly more than half of the 420 Psychology students (N=215; 50.8%) correctly classified all four items as plagiarised or not. The remaining students correctly answered between none and three questions.

Most students got the first question correct (93.8%), followed by the fourth question (82.2%), the second question (75.5%), and finally the third question (71.5%). Turning to the Psychology student paraphrases, the majority contained at least one instance of plagiarised text (word string, substitution, addition, deletion, or reversal). Using substitutions (453 instances) was the most common type of plagiaristic behaviour. This was followed by word strings (376 instances). Fewer occurrences of the other behaviours were observed: 58 additions, 34 deletions, and 18 reversals.

For the second task, most university students got the first plagiarism scenario correct (58% of undergraduates and 52% of graduates). For Scenario 2, 62% of undergraduates and 66% of graduate students correctly recognized the reasons why a particular paraphrase was plagiarised. A slim majority of students got the correct answer for Scenario 3 (50% of undergraduates and 55% of graduate students). Results for Scenario 4 revealed that a minority of students selected the correct answer (26% of undergraduate students and 36% of graduate students).

## **Discussion**

The objective of this project was to assess the ability of students taking online courses to recognize plagiarised material and to paraphrase properly. This study found that almost half of the students in a third-year psychology course did not recognize plagiarised material consistently. The evidence does not support the prediction that student scores would improve over time given feedback and practice, as more students got the first question correct (93.8%) than the fourth question (82.2%). Furthermore, the majority of these students did not correctly paraphrase a passage they were asked to write in their own words, even after they had received feedback on their recognition quizzes. This suggests more extensive instruction is needed.

Undergraduate and graduate students from throughout the university also failed to recognize many plagiarised passages that included word strings, reversals, substitutions, additions, and deletions. As suggested by Hochstein et al. (2008), the poor ability of students to identify plagiarised passages may imply poor understanding of the concept. Therefore, when these students write their course essays, they may not be able to recognize their own tendency toward plagiarism and thus engage in it accidentally.

If it is true that a large number of students do not fully understand plagiarism, proactive prevention rather than punishment may be the best means to deal with it. Several authors suggest training in skill development is key. Information literacy has been touted as a crucial factor in preventing plagiarism (Rolfe, 2011). Reading peer-reviewed journal articles, as is often asked of students in higher education, can be very difficult. Students may need guidance in their selection of journals, but even more so, students may need to be taught how to read such articles. Prevention may need to focus on helping students grasp the main ideas and summarize material rather than focusing on details (Walker, 2008). This may help ensure “students don’t conclude that creating a technically perfect bibliography is enough” (Howard & Davies, 2009, p. 65).

Rather than perceiving plagiarism as a type of cheating, it may be more appropriate to identify it, particularly poor paraphrasing, as a weakness in skills. The remedy for committing plagiarism should be sending students to tutorials or other methods of learning to read, write, and reference at the level required for the discipline (Briggs, 2009).

Becoming familiar with terminology, learning how to read academic papers for meaning and how to summarize the main points of a text, in addition to learning proper citation rules and how to avoid plagiarism, are essential skills for students in higher education. Currently, instructors may be assuming that students have skills that, in fact, they lack; they may also be assuming that all instances of plagiarism are intentional. If students do not possess the skills of their disciplines, asking them to write without plagiarizing may be asking many of them to perform “what they have not been taught” (Levin, 2006, p. 6). Knowing where student weaknesses lie provides essential information as to where to direct intervention.

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## **The Robot Project: Teaching Concepts and Brainstorming Techniques from Perspective Mechanics to Storyboard Animatic**

### *Abstract:*

The Robot Project is a case study of a brainstorming exercise that involves classroom collaboration. The purpose of the project is to introduce basic perspective exercises to generate a character and situation for a short story. The processes involve hand drawn perspective sketches to quickly idealize and narrow down camera shots of scenes for their sequence. These concept drawings are scanned then fully enhanced through the use of digital editing software to develop a fully rendered digital short story animatic. Techniques include character development, as a classroom activity, digital paint and image manipulation, and digital video editing including sound.

### *Introduction*

Researchers suggest that, although IQ scores are rising, there is a decline in creativity in America [1]. "To be creative requires divergent thinking (generating many unique ideas) and then convergent thinking (combining those ideas into the best result)" [2]. In this paper, I discuss the trials of developing an effective technique to generate a character and situation for a short story. Visual Thinking is a class I teach within the Digital Media Program at East Tennessee State University where this case study applies. In previous classes, students had difficulty generating character and story concepts. Through innovation and restructuring of class projects, I effectively engage students to develop imaginative ideas to produce a storyboard animatic as a class project.

Visual Thinking is a class to introduce students to digital media concepts by bridging techniques of hand drawn perspective sketches and refining those renderings through the use of digital editing and design software. Students begin with traditional exercises to develop skills in 2D perspective sketches. These 2D exercises progress to more complex creations such as interior and exterior environment sketches. From this, students are encouraged to look beyond the 2D plane to envision digital 3D environments. The objective is to move students beyond the basic skills so they can transfer sketches to fully-rendered computer generated imagery.

### *The "Robot Project" Origin*

In earlier classes I found that the projects I assigned yielded lackluster results and left students frustrated as we progressed to storyboard development. Students would often ask in a

panic, "What should I do?" The solution was simple. Begin with traditional perspective exercises then institute a project that everyone had a hand in creating. Educators suggest brainstorming activities for storyboarding [3]. The concept of the "Robot Project" allowed students a different way to collectively brainstorm. It also allows students to draw, even if the student is not skilled in drawing. Visual Thinking is not a figure drawing class. Drawing is a skill that may take years to develop for one to effectively draw a proportionally correct human figure. Instead, I thought it would be interesting to develop a robot figure because human proportion can be excluded, plus it is an extension of previous perspective exercises while allowing creativity to flourish.

### *A Hands-On Brainstorming Session*

The project was simple. All class members sat around a table; in this class there were 27 students. I asked them, using skills from the perspective exercise, to create a robot in 90 seconds. The students thought this was extreme, but they frantically drew to accomplish the task. After 90 seconds, I told them to pass their drawings to the right and continue drawing the robot, adding or deleting details from the previous person. This exhibited loud and hilarious reactions from the students. The process continued until each student got back their original sketch. When the laughter and jokes faded, each student was looking at a distorted mess of a robotic structure. However, before each student was an image yielding a multitude of possibilities.

### *Refining the Robot*

After each student got back his or her robot sketch that was passed around the class, they were asked to refine their robot character and incorporate at least 20 percent of what was before them. This refining period was done through a series of small thumbnail sketches to narrow down their ideas to produce a final image. Once the final render was done, it was scanned and sent to the digital environment for final color, shading and shadowing. The results were successful. Plus, this was the catalyst of the character or storyline they would use for their storyboard creations. I removed the problem of "What should I do?" At this time they were asked to answer a series of questions about their robots including:

- Where is it from?
- What is its purpose?
- What is its mission?
- What is its special ability?
- Who is its nemesis?
- Is it to protect or destroy?

Through the development of their robots, their ideas flourished with stories of their robots, and some students even came up with other main characters for their project. Now we were ready for storyboard creation.

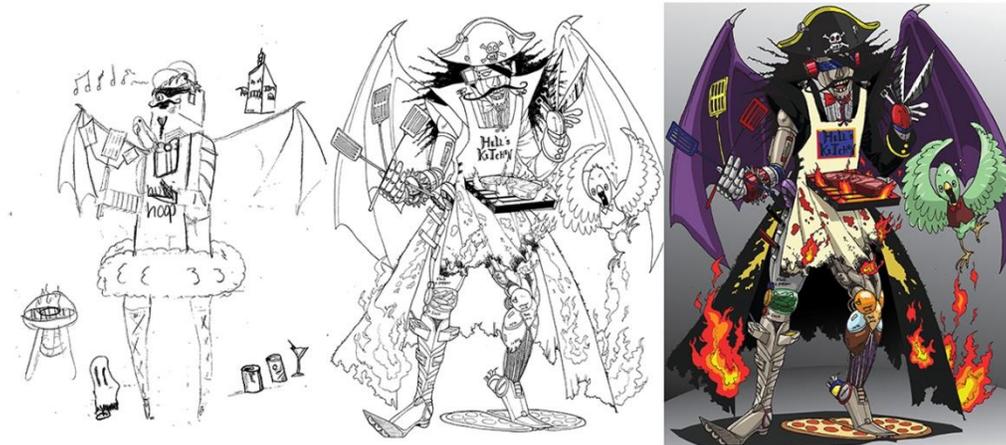


Fig. 1 Interactive Classroom Sketch to Final Robot Rendering, Sachiko Iba

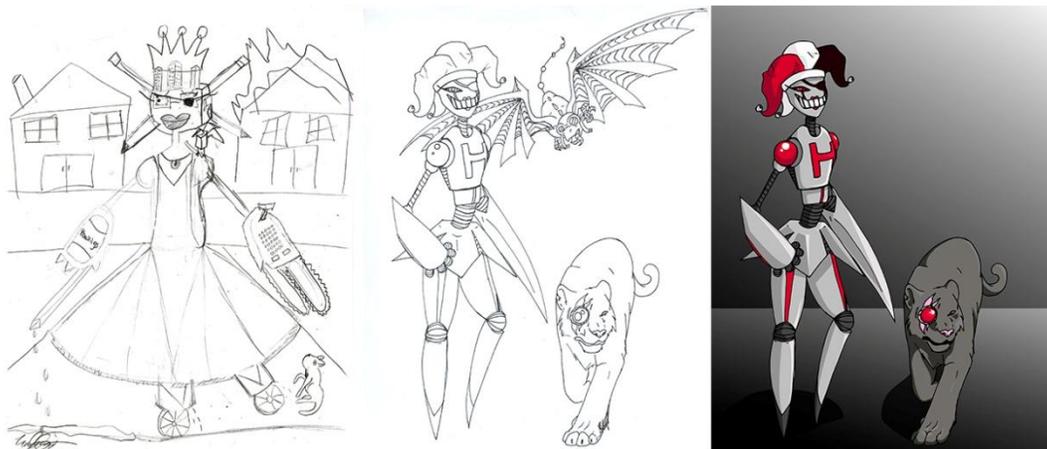


Fig. 2 Interactive Classroom Sketch to Final Robot Rendering, Taylor Grant

### The Storyboard

The restructuring of projects and the order in which they were assigned from the beginning of classes all led to this point of storyboard development. By now, the students had a grasp of perspective sketching, and through the robot project, had an idea of a storyboard sequence. Each student rendered an 11" x 17" storyboard template consisting of 6 frames per sheet, including comment boxes for dialogue and notes pertaining to the story sequence. A minimum of 12 frames were required for the project; however, students could illustrate more frames if needed. I encouraged students to look at each frame as if it was shot through a camera. Therefore, they needed to vary shots from extreme close-ups, close-ups, medium and wide shots. I presented several examples of how to look at different angles of a scene. The idea was to keep the shots interesting and varied. Students would produce their storyboard frames by sketching in pencil first, then finalizing by going back over their sketches with a fine point marker, and then erasing all pencil marks. Scanning the storyboards as a fine point marker contour sketch worked much better than pencil when imported into the design software. I also had the students scan their images at a high resolution. This foresight was going to prove beneficial when creating the animatic. High resolution images will allow the opportunity for video

retargeting. Video retargeting adapts the high resolution images to better suit the target video format. The storyboard images can be moved during a shot to introduce virtual pans, cuts and zooms that ensure cinematic plausibility [4].

When the storyboard images were imported into the design software, we were able to extract the black contour drawing and use as a transparent overlay. I asked the students to fill, shade and shadow the drawings using only grayscale. This created a high contrast image that appeared very sharp. This process could be done in color, but since this was an entry level class, most students do not understand color theory and may produce disastrous color schemes.

When the storyboard frames were completely rendered, each frame was then cropped and saved individually, such as Frame1.jpg, Frame2.jpg, Frame3.jpg, and so on. It was now time to create the animatic.

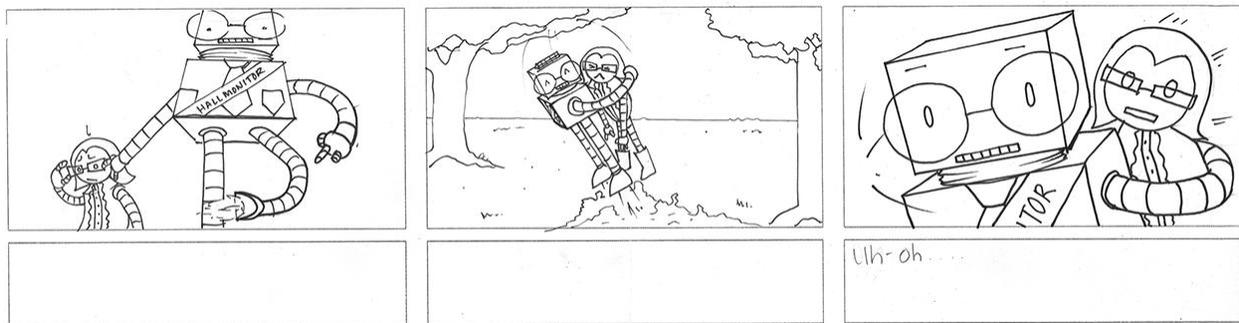


Fig. 3 Storyboard Contour Rendering, Shasta Bailey



Fig. 4 Final Storyboard Rendering, Shasta Bailey

### Storyboard Animatic

Using video editing software, all of the student-rendered frames were imported into the program. We setup a project as HD720 24fps. As mentioned earlier, since the images were formatted at a higher resolution than the video format allowed the students to pan and scale while keeping the entire image in frame. When the storyboard creation was in progress, I showed examples of previous animatics and provided resources for music and sound effects. I asked students to research appropriate music for their animatic. Musical soundtracks are a

crucial element for a sequenced video presentation. Music will create a mood and allow the editor to effectively use the timing of the music to create edit points for their clips. This provides a flow for the video sequence and transitions. Furthermore, music engages the brain and causes audiences to focus more intently [5]. Sound effects were also encouraged as accents for certain actions within their images. Voiceover provided dialog and gave the characters personality. When the video sequence was finalized, it was rendered out as a single video file for presentation.

### *Conclusion*

In earlier classes I worked on storyboard development immediately after my perspective sketch exercises. This resulted in a problem for students. Students struggled to develop a creative idea for a storyline. By implementing a classroom interactive project, "The Robot Project", students were more focused on a character, and stories developed through the creation of that character. Some students decided not use the robot character as their story theme, but through this exercise, students opened doors to a creative story solution. This was evident through student feedback and consistent upward quality of storyboard sequences.

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1. Title of the submission: How Classroom Goal Structure and Personal Goal Orientation Influence Students' Patterns of Adaptive Learning on Writing
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6. Abstract and full paper

The purposes of this study were to investigate the patterns of adaptive learning both on students of different goal orientation in the same context and on students of the same goal orientation in different contexts. This study adopted pretest-posttest experimental design. The participants were four Grade 4 classes selected from an elementary school in Taichung City. The instruments used in this study included classroom goal structure scale, personal goal orientation scale, and patterns of adaptive learning scale. The obtained data were analyzed by one-way MANCOVA. The findings in this study were as follows: (A) Students who pursued mastery goals in mastery context demonstrated adaptive learning behavior pattern, and students who avoided performance goals were associated with maladaptive learning behavior pattern. Students with avoidance- mastery goals and approach- performance goals were inconsistent effects. (B) The students of the same goal orientation in different contexts had non-significant difference in their patterns of adaptive learning. The results of this study indicated that students with mastery goal orientation perceived a strong mastery goal structure in the classroom, their patterns of adaptive learning would become obvious. Furthermore, it was suggested that teachers should encourage students pursuing mastery goals instead of emphasizing the performance goals in the writing classroom.

Keywords: classroom goal structure, goal orientation, patterns of adaptive learning, writing

### **Introduction**

According to the most recent National Assessment of Educational Progress, many children do not learn to write well enough to meet classroom writing demands (Rogers & Graham, 2008). Studies based on American classroom demonstrated that the quality of the child-child and teacher-child interaction is crucial to the achievement of successful reading and writing development for all children, (Guthrie & Alao, 1997). Observing that children with reading and writing difficulties lack supportive environments, Kjellin & Wennerstrom (2006) emphasized the impact of classroom climate.

How do students develop positive learning behavior in school? Two tracks of research have been considered. The first track of research reflects the personal perspective of motivation which focuses on the motivational dynamics of individuals with different types of personal goals (Dweck & Leggett, 1988; Elliot, 1999). The second track of research reflects the contextual perspective which focuses on how different types of contextual goal structures influence achievement-related behavior in educational settings (Ames, 1992; Ames & Archer, 1988).

In the recent research of achievement goal constructs, the goal orientation has been classified into four types of personal goals: (a) approach-mastery goal, (b) avoidance-mastery goal, (c) approach-performance

goal, and (d) avoidance-performance goal (Elliot & McGregor, 2001; Pintrich, 2000a, 2000b, 2000c). Many studies have shown that holding mastery goals is associated with many positive outcomes. However, Goal theory assumes that students' motivation is influenced not only by their individual goal orientation but also by the classroom environment (Ames, 1992). For the most part, studies demonstrate that perceptions of mastery-focused classroom are associated with positive outcomes, whereas perceptions of performance-focused classroom are associated with negative outcomes for students (Gutman, 2006).

A wide range of studies have shown that goal orientations and goal structures are associated with a constellation of motivational and achievement outcomes (Ames & Archer, 1988; Kaplan, Middleton, Urdan & Midgley, 2002; Lau & Nie, 2008; Turner & Patrick, 2004; Young, 1997). In this study, the researcher considered both the classroom goal structure perceived by students and the personal goal orientation that students held, and examined their influences on students' patterns of adaptive learning.

### **Motivation to Learn**

Achievement goal theory describes different purposes that students adopt for engaging in academic tasks (Ames, 1992; Kaplan et al., 2002). Researchers have focused predominantly on two different types of goals: mastery goals and performance goals. Mastery goals are focused on increasing competence, whereas performance goals are focused on demonstrating competence. Each of these goals can be held by individual students (i.e., personal goals) and also be perceived as being emphasized in the classroom (i.e., goal structure) (Kaplan et al., 2002; Turner & Patrick, 2004; Urdan, Ryan, Anderman, & Gheen, 2002).

There is also a distinction between the goals of the individual and goal-related messages that students perceive in the classroom. Thus, both factors influence students' use of various cognitive strategies, adaptive and maladaptive behaviors. One factor which influences students' use of various cognitive strategies, adaptive and maladaptive behaviors is motivation from a personal goal orientation perspective (Ames, 1992). Another factor that may influence cognitive strategy is classroom environment (Ames, 1992; Ames & Archer, 1988; Kaplan et al., 2002; Lyke & Young, 2006).

#### ***Personal Factors: Personal Goal Orientation***

In educational settings, students' achievement goals represent their reasons or purposes for engaging in academic tasks. A lot of empirical evidence has been accumulated in relation to four types of personal goals: (a) approach-mastery goal, in which the students try hard to acquire new knowledge and improve their skills; (b) avoidance-mastery goal, in which the students are very cautious to avoid making mistakes; (c) approach-performance goal, in which the students strive to demonstrate their competence over others; and (d) avoidance-performance goal, in which the students avoid competing with others to avoid showing their incompetency (Pintrich, 2000a, 2000b, 2000c).

Results from many studies have shown that holding mastery goals is associated with many positive outcomes, including choosing challenging tasks, using adaptive learning strategies, seeking help when needed, and holding positive attitudes and emotions in relation to tasks, the classroom environment, and the self (Ames, 1992; Kaplan et al., 2002; Urdan, 1997). Both approach-performance and avoidance-performance goals are associated with anxiety, a disorganized approach to studying, the use of superficial learning strategies, and low exam performance. Approach-performance goals are also linked to efficacy beliefs, effort and persistence while studying, whereas avoidance-performance goals are also associated with avoiding engaging actively in task requirements (Kaplan et al., 2002; Urdan et al., 2002).

### ***Contextual Factors: Classroom Goal Structure***

In school, students perceive information which can emphasize different reasons for engaging in classroom tasks (Ames & Archer, 1988). Several empirical work in goal theory has found that students' personal goals are affected by their perceptions of the classroom goal structure (Roeser, Midgley & Urdan, 1996). Classroom environments communicate purposes and meaning for engaging in academic tasks to students, and students' perceptions of these messages are related to how they participate in class. Similar to the meanings associated with personal goals, a mastery goal structure conveys a perception that students' learning and understanding, in contrast to mere memorization, are valued and that success is accompanied by effort and indicated by personal improvement. A performance goal structure conveys to students that learning is predominantly a means of achieving recognition, and that success is indicated by outperforming others, surpassing normative standards, or looking smart (Ames, 1992).

The classroom with mastery goal structure describes an environment in which the teacher emphasizes that learning, task mastery, and working hard are important. The classroom with performance goal structure describes an environment in which the teacher emphasizes that demonstrating high ability and getting better grades than other students are important. Classrooms that are perceived as having a strong emphasis on mastery goals have been shown to be the most adaptive. They have the lowest rates of students' cheating, self-handicapping, being disruptive, and avoiding seeking help. In contrast, classrooms that are perceived as highly performance-focused tend to have more negative outcomes, including higher rates of students' cheating, disruptive behavior, self-handicapping, and avoiding seeking help (Kaplan et al., 2002; Turner & Patrick, 2004; Urdan et al., 2002).

Most research in goal theory focused on independent effects of different goals. However, few researches considered the effects of combining personal goals with classroom goal structures, not to mention those on writing. In this study, the researcher considered both the classroom goal structure perceived by students and the personal goal orientation that students held, and examined their influences on students' patterns of adaptive learning on writing.

## **Method**

### ***Participants***

The participants in this study were four Grade 4 classes selected from an elementary school in Taichung City. The sample consisted of 28 males (54.90%) and 23 females (45.10%) in mastery goal structure, and consisted of 26 males (54.17%) and 22 females (45.83%) in performance goal structure. The participants were chosen because all students formally started learning writing in Grade 3, so the classroom climate had already been formed in Grade 4.

### ***Measures***

All of the items on the survey were rated on 5-point Likert scales ranging from "Not at all true" to "Very true." The scales were examined by using a sample of 408 Grade 4-6 students from 15 classes in 4 elementary schools in Taichung City. The gender distribution of the sample was 52.21% males and 47.79% females.

*Classroom Goal Structure Scale on Writing.* Two types of classroom goal structures were assessed--classroom mastery and classroom performance goal structures. The measures of classroom mastery and classroom performance goal structures were adapted from the classroom goal structure scale on Writing, which was designed by the researcher. A confirmatory factor analysis was conducted to examine the factor

structure of the constructs. A two-factor structure provided a good fit for the data,  $\chi^2(19, N=396)=63.67$ , RMSEA = .077, GFI = .96, AGFI = .93, NFI = .93, NNFI = .93, CFI = .95. Each scale showed adequate internal consistency ( $\alpha = .84$  for classroom mastery goal structure and  $\alpha = .72$  for classroom performance goal structure).

Classroom-level measures of classroom goal structures were derived from aggregating (i.e., averaging within each classroom) individual students' perceptions of classroom goal structures.

*Personal Goal Orientation Scale on Writing.* Four types of personal goals were measured: approach-mastery, avoidance-mastery, approach-performance, and avoidance-performance goals. The personal approach-mastery goal scale assessed students' desire to learn new thing and to master challenging concepts in writing. The personal avoidance-mastery goal scale assessed students' fear of making mistake and failing to write well. The personal approach-performance goal scale assessed students' desire to demonstrate their superior ability relative to their peers and to obtain favorable judgment from teachers. The personal avoidance-performance goal scale assessed students' desire to hide their weaknesses in writing and to avoid being perceived as incompetent by their teachers and peers. The measures of personal goals were designed by the researcher. A confirmatory factor analysis was conducted to examine the factor structure of the constructs. A four-factor structure provided an adequate fit for the data,  $\chi^2(129, N=399) = 282.04$ , RMSEA = .058, GFI = .92, AGFI = .90, NFI = .90, NNFI = .92, CFI = .93. Each scale showed adequate to high internal consistency ( $\alpha = .80$  for personal approach-mastery goal,  $\alpha = .78$  for personal avoidance-mastery goal,  $\alpha = .84$  for personal approach- performance goal, and  $\alpha = .81$  for personal avoidance-performance goal).

*Patterns of Adaptive Learning Scale on Writing.* Six adaptive learning behavior patterns were assessed in this study. The adaptive learning behavior patterns included self-efficacy, positive emotion, effort and persistence, interest, using strategies, and seeking help in writing classes. Our measure was based on students' self-report of their perceptions in their writing classes. The self-efficacy scale assessed students' confidence in their own writing ability. The positive emotion scale assessed students' positive attitudes and affection in relation to task, the classroom environment, and the self. The effort and persistence scale assessed students' attention, engagement, effort, and persistence. The interest scale assessed students' intrinsic motivation and enjoyment. The measure of using strategies scale was based on students' report of their using adaptive learning strategies. The seeking help scale assessed students' seeking help behavior when needed. The measures of personal adaptive learning behavior patterns were designed by the researcher. A confirmatory factor analysis was conducted to examine the factor structure of the constructs. A six-factor structure provided a good fit for the data,  $\chi^2(382, N=390) = 706.63$ , RMSEA = .047, GFI = .91, AGFI = .90, NFI = .91, NNFI = .95, CFI = .96. Each scale showed adequate to high internal consistency ( $\alpha = .87$  for self-efficacy,  $\alpha = .88$  for positive emotion,  $\alpha = .90$  for effort and persistency,  $\alpha = .88$  for interest,  $\alpha = .82$  for using strategies,  $\alpha = .85$  for seeking help).

### **Procedure**

The "Classroom Goal Structure Scale on Writing" was administered to all Grade 4 classes in the third week of the first semester. Then four classes were chosen: two with the highest classroom mastery goal structure class average and another two with the highest classroom performance goal structure class average. After making sure that the four classes were the target through observation, "Personal Goal Orientation Scale on Writing" and "Patterns of Adaptive Learning Scale on Writing" were administered to these four classes.

Finally, at the end of the semester, “Patterns of Adaptive Learning Scale on Writing” was given again as the posttest.

## Results

### *Classroom Level: Mastery Goal Structure*

Means and deviations for the patterns of adaptive learning scale are reported in Table 1. The first omnibus test for the overall adaptive learning behavior patterns by Multivariate ANCOVA yielded statistically significant result ( $\lambda=.096, p=.000, \eta^2=.542$ ). In Table 2, statistically significant differences by univariate ANCOVA were found for the six adaptive learning behavior patterns on students of different goal orientation in the mastery classroom climate. Individual ANCOVAs revealed that four type students of personal goals differed on the following adaptive learning behavior pattern measures.

For self-efficacy,  $F_{(3,41)}=6.61, p=.001, \eta^2=.326$ , approach-mastery, avoidance-mastery, and approach-performance students perceiving more self-efficacy than avoidance-performance students.

For positive emotion,  $F_{(3,41)}=7.80, p=.000, \eta^2=.363$ , approach-mastery students perceived more positive emotion than avoidance-mastery and avoidance-performance students; avoidance-mastery and approach-performance students perceived more positive emotion than avoidance-performance students.

For effort and persistence,  $F_{(3,41)}=7.71, p=.000, \eta^2=.361$ , approach-mastery, avoidance-mastery, and approach-performance students revealing more effort and persistence than avoidance-performance students.

For interest,  $F_{(3,41)}=8.22, p=.000, \eta^2=.363$ , approach-mastery students revealing more interest than avoidance-mastery, approach-performance, and avoidance-performance students; avoidance-mastery and approach-performance students revealing more interest than avoidance-performance students.

For using strategies,  $F_{(3,41)}=9.62, p=.000, \eta^2=.413$ , approach-mastery students revealing more using strategy behaviors than approach-performance, and avoidance-performance students; avoidance-mastery and approach-performance students revealing more using strategy behaviors than avoidance-performance students.

For seeking help,  $F_{(3,41)}=58.56, p=.000, \eta^2=.811$ , approach-mastery students revealing more seeking help behaviors than avoidance-mastery, approach-performance, and avoidance-performance students; avoidance-mastery students revealing more seeking help behaviors than approach-performance and avoidance-performance students.

Table 1 Means and standard deviations for the patterns of adaptive learning scale on students of different goal orientation in the mastery classroom climate

Scale	N	Self-efficacy		Positive emotion		Effort and persistence		Interest		Using strategies		Seeking help	
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
approach-mastery													
Pre-test	12	3.23	.65	3.07	.68	2.88	.83	3.32	.96	2.96	.91	3.06	.87
Post-test	12	3.61	.62	3.53	.79	3.57	.91	4.14	.80	3.30	1.03	3.92	.63
avoidance-mastery													
Pre-test	13	2.80	.82	2.76	.97	2.71	1.06	2.95	.94	2.82	.85	2.67	1.05
Post-test	13	2.67	.89	2.53	.84	2.51	.83	3.32	.95	2.79	.79	3.05	.18
approach-performance													
Pre-test	13	2.62	.58	2.46	.64	2.13	.51	2.46	.48	2.50	.77	2.46	.73
Post-test	13	2.65	.55	2.49	.56	2.41	.75	2.97	.67	2.31	.42	2.32	.22
avoidance-performance													
Pre-test	13	2.07	.64	2.05	.63	1.91	.68	2.21	.79	1.87	.66	1.92	.70
Post-test	13	2.17	.42	1.72	.57	1.82	.74	1.91	.65	1.67	.50	1.46	.33

Table 2 All statistically significant effects for the six adaptive learning behavior patterns on students of different goal orientation in the mastery classroom climate

Goal types	type 1	type 2	type 3	type 4	F	$\eta^2$	Post-hoc
Scale	Adjusted mean	Adjusted mean	Adjusted mean	Adjusted mean			
Self-efficacy	3.53	2.60	2.62	2.36	6.61*	.326	1,2,3>4
Emotion	3.39	2.42	2.52	1.92	7.80*	.363	1>2,4; 2,3>4
Effort.	3.60	2.42	2.40	1.91	7.71*	.361	1,2,3>4
Interest	3.94	3.16	3.01	2.13	8.22*	.376	1 >2,3,4;2,3>4
Strategies	3.39	2.79	2.24	1.66	9.62*	.413	1>3,4;2,3>4
Seeking help	3.88	3.00	2.36	1.51	58.56*	.811	1>2,3,4;2>3,4

\*  $p < .05$

Notes: The type 1 is "Approach-mastery", type 2 is "avoidance-mastery", type 3 is "approach-performance", and type 4 is "avoidance-performance".

### Classroom Level: Performance Goal Structure

Means and deviations for the Patterns of Adaptive learning Scale are reported in Table 3. The overall adaptive learning behavior patterns by Multivariate ANCOVA were also found statistically significant effect indicating a difference among four types of personal goals,  $\lambda = .089$ ,  $p = .000$ ,  $\eta^2 = .554$ . In Table 4, statistically significant differences by univariate ANCOVA were found for the six adaptive learning behavior patterns on students of different goal orientation in the performance classroom climate. Individual ANCOVAs revealed that four type students of personal goals differed on the following adaptive learning behavior pattern measures.

For using strategies,  $F_{(3,37)} = 6.81$ ,  $p = .001$ ,  $\eta^2 = .356$ , approach-mastery students revealing more using

strategy behaviors than avoidance-mastery, approach-performance, and avoidance-performance students.

For seeking help,  $F_{(3,37)} = 97.26, p = .000, \eta^2 = .887$ , approach-mastery goal students revealing more seeking help behaviors than avoidance-mastery, approach-performance, and avoidance-performance students. Avoidance-mastery students revealing more seeking help behaviors than approach-performance and avoidance-performance students. And approach-performance students revealing more seeking help behaviors than avoidance-performance students. The self-efficacy, positive emotion, effort and persistence, and interest effects among four types of personal goals were not statistically significant ( $F_{(3,37)} = 1.35, p = .275; F_{(3,37)} = 1.57, p = .214; F_{(3,37)} = 2.61, p = .066; F_{(3,37)} = 1.97, p = .136$ ).

Table 3 Means and standard deviations for the patterns of adaptive learning scale on students of different goal orientation in the performance classroom climate

Scale	N	Self-efficacy		Positive emotion		Effort and persistence		Interest		Using strategies		Seeking help	
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
approach-mastery													
Pre-test	13	3.14	.55	3.36	.92	3.36	.73	3.98	.97	3.42	.89	3.73	.94
Post-test	13	3.29	.64	3.51	.65	3.35	.65	3.97	.67	3.17	.67	3.87	.41
avoidance-mastery													
Pre-test	11	3.30	.75	3.05	.84	3.14	.77	3.35	.88	3.29	1.07	3.24	.81
Post-test	11	2.94	.44	3.06	.87	2.89	.84	3.47	.81	2.91	.45	3.14	.19
approach-performance													
Pre-test	13	2.79	.61	2.38	.75	2.65	.52	2.87	.78	2.59	.64	2.46	.72
Post-test	13	2.93	.57	2.63	.87	2.35	.71	2.90	.73	2.60	.67	2.44	.22
avoidance-performance													
Pre-test	10	3.06	.82	2.45	.88	2.77	1.15	2.57	.74	2.60	.81	2.92	.78
Post-test	10	2.55	.99	2.28	.87	2.37	.98	2.57	.89	1.77	.42	1.38	.25

Table 4 All statistically significant effects for the six adaptive learning behavior patterns on students of different goal orientation in the performance classroom climate

Goal types	type 1	type 2	type 3	type 4	F	$\eta^2$	Post-hoc
Scale	Adjusted mean	Adjusted mean	Adjusted mean	Adjusted mean			
Self-efficacy	3.22	2.84	2.99	2.68	1.35	.098	
Emotion	3.33	3.01	2.71	2.47	1.57	.113	
Effort.	3.30	2.85	2.42	2.41	2.61	.175	
Interest	3.66	3.39	3.06	2.85	1.97	.138	
Strategies	3.06	2.87	2.62	1.92	6.81*	.356	1>2,3,4
Seeking help	3.77	3.11	2.50	1.47	97.26*	.887	1>2,3,4;2>3,4;3>4

\*  $p < .05$

Notes: The type 1 is “Approach-mastery”, type 2 is “avoidance-mastery”, type 3 is “approach-performance”, and type 4 is “avoidance-performance”.

**Personal Level: Goal Orientation**

Means and deviations for the patterns of adaptive learning scale on students of the same goal orientation in different contexts are reported in Table 5, Table 6, Table 7, and Table 8. The overall adaptive learning behavior patterns by Multivariate ANCOVA were not statistically significant difference between mastery and performance goal structure. Approach-mastery goal structure,  $\lambda=.563$ ,  $p=.196$ ,  $\eta^2=.464$ ; Avoidance-mastery goal structure,  $\lambda=.802$ ,  $p=.829$ ,  $\eta^2=.198$ ; Approach-performance goal structure,  $\lambda=.825$ ,  $p=.826$ ,  $\eta^2=.175$ ; Avoidance-performance goal structure,  $\lambda=.439$ ,  $p=.139$ ,  $\eta^2=.561$ .

Table 5 Means and standard deviations for the patterns of adaptive learning scale on students of the approach-mastery goal orientation in different contexts

Scale	N	Self-efficacy		Positive emotion		Effort and persistence		Interest		Using strategies		Seeking help	
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Mastery goal structure													
Pre-test	12	3.23	.65	3.07	.67	2.88	.83	3.32	.96	2.96	.91	3.06	.87
Post-test	12	3.61	.63	3.53	.79	3.57	.91	4.14	.80	3.31	1.03	3.92	.63
Performance goal structure													
Pre-test	13	3.14	.55	3.36	.92	3.36	.73	3.99	.97	3.42	.89	3.73	.94
Post-test	13	3.29	.64	3.51	.65	3.35	.65	3.97	.67	3.17	.67	3.87	.41

Table 6 Means and standard deviations for the patterns of adaptive learning scale on students of the avoidance -mastery goal orientation in different contexts

Scale	N	Self-efficacy		Positive emotion		Effort and persistence		Interest		Using strategies		Seeking help	
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Mastery goal structure													
Pre-test	13	2.80	.82	2.76	.97	2.71	1.06	2.95	.94	2.82	.85	2.67	1.05
Post-test	13	2.67	.89	2.53	.84	2.51	.83	3.32	.95	2.79	.80	3.05	.18
Performance goal structure													
Pre-test	11	3.30	.75	3.05	.84	3.14	.77	3.35	.88	3.29	1.07	3.24	.81
Post-test	11	2.94	.44	3.06	.87	2.89	.84	3.47	.81	2.91	.45	3.14	.19

Table 7 Means and standard deviations for the patterns of adaptive learning scale on students of the approach- performance goal orientation in different contexts

Scale	N	Self-efficacy		Positive emotion		Effort and persistence		Interest		Using strategies		Seeking help	
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Mastery goal structure													
Pre-test	13	2.63	.58	2.46	.64	2.13	.51	2.46	.48	2.50	.77	2.46	.73
Post-test	13	2.65	.55	2.49	.56	2.41	.75	2.97	.67	2.31	.42	2.32	.22
Performance goal structure													
Pre-test	13	2.79	.61	2.38	.75	2.65	.52	2.87	.78	2.59	.64	2.46	.72
Post-test	13	2.93	.57	2.63	.87	2.36	.71	2.90	.73	2.60	.67	2.44	.22

Table 8 Means and standard deviations for the patterns of adaptive learning scale on students of the avoidance- performance goal orientation in different contexts

Scale	N	<u>Self-efficacy</u>		<u>Positive emotion</u>		<u>Effort and persistence</u>		<u>Interest</u>		<u>Using strategies</u>		<u>Seeking help</u>	
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Mastery goal structure													
Pre-test	13	2.07	.64	2.05	.63	1.91	.68	2.21	.79	1.87	.66	1.92	.70
Post-test	13	2.17	.42	1.72	.57	1.82	.74	1.91	.65	1.67	.50	1.46	.33
Performance goal structure													
Pre-test	10	3.06	.82	2.45	.88	2.77	1.15	2.57	.74	2.60	.81	2.92	.78
Post-test	10	2.55	.99	2.28	.87	2.37	.98	2.57	.89	1.77	.42	1.38	.25

### Discussion

Establishing linkages between the classroom learning environment, personal goals, and student motivational outcomes has been very important, determining how to create these goals in the classroom is the next step, though not an easy one.

How students develop positive learning behaviors has been investigated following two tracks. The most common one has been to explain students' behavior based on motivational dynamics of individuals. More recent researches overemphasized the effects of classroom learning environments. However, this study showed that the four types of students with personal goals had significantly different adaptive learning behaviors in mastery goal structure. The students with approach-mastery goals outperformed the other three types of students in self-efficacy, positive emotion, effort and persistence, interest, using strategies, and seeking help under mastery goal structure. Nevertheless, under performance goal structure, they outperformed the other three types of students only in using strategies and seeking help. Generally speaking, students with approach-mastery goal demonstrated the best patterns of adaptive learning, especially under mastery-goal structure. On the other hand, students with avoidance-performance goals revealed the worse patterns of adaptive learning. Students with avoidance- mastery goals and approach- performance goals were inconsistent effects. This study implies that to foster the mastery goal structure or increase personal mastery goal orientation will associate to the adaptive learning behavior patterns. These findings are by and large consistent with Lau and Mie (2008), and Kaplan et al. (2002).

Given that research indicates that students with approach-mastery goals and perceptions of a classroom mastery goal structure are related to more adaptive learning behaviors, these results may not be surprising. What is striking is that students of the same goal orientation in different contexts had non-significant difference in their patterns of adaptive learning. In other words, their patterns of adaptive learning under classroom with mastery goal structure were not significantly better than classroom with performance goal structure. It is worth noting that the personal goal orientation appears to be more influential than classroom environments on students' patterns of adaptive learning. Ames (1992) emphasized that children in the same classroom are treated differently and therefore have different experiences. Students have different classroom experiences because they bring different prior experiences with them (Ames & Archer, 1998). It is necessary to attend to how that student perceives and gives meaning to classroom experiences. It cannot be studied through behavioral checklists or observations. By combining qualitative and quantitative method, it was

possible not only to determine that the writing classroom climates and goal structures in each class were different, but also to identify some of the possible explanations for why they were different. The qualitative data gave depth and meaning to the “numbers”. It is suggested that future studies may focus on triangulation of data from students, teachers, or related documents.

The present study has a number of limitations. First, the researcher used a self-report measure of classroom goal structure, personal goal orientation and patterns of adaptive learning. Whereas this measure has been used successfully in other studies, it is still not a direct measure. The use of self-report measure of latent variables such as classroom goal structure, personal goal orientation and patterns of adaptive learning pose problems that researchers must consider. Thus future studies should be designed to link specific individual process to these latent variables in order to truly understand interindividual differences. In addition, the researcher was only able to assess classroom goal structure and personal goal orientation at one point, and in an elementary school. Assessing these latent variables at additional points in time and at additional sites would have allowed us to develop more precise trajectories of changes.

In summary, results of the present study indicate that students with approach-mastery goals in the mastery goal structure revealed more adaptive learning behaviors, whereas students with avoidance-performance goals revealed maladaptive learning behaviors. So teachers may encourage students pursuing mastery goals by stressing the importance of learning writing skills and its relevance to the formation of mastery goal structure in a Writing Classroom.

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## **Sports as a Creative Way to Teach Science**

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### **Introduction and Objectives:**

This program addresses the creative diversity inherent in learning by using sports as the context through which scientific principles can be explored. Through the vehicle of sports not only are students learning the underlying principles of science embedded in the mechanics of performing a sport; but also, they are learning the scientific principles in an atmosphere that embraces the psycho-social-creative-emotional connection to learning. For instance, everyday students learn how to ride a bike, throw a ball, and/or jump rope. They learn these activities in an environment that is non-competitive and non-threatening academically. What they are not aware of is the scientific and mathematics principles laden in performing these activities. In the classroom students learn these scientific and mathematical principles in a context that is foreign to their everyday experiences. They learn about the trajectory of a golf ball without connecting this principle with the actual practice of hitting a golf ball.

What is unique about the concept of this program is that the academic and the everyday experiences of students can be bridged through the creative process of using sports as a mechanism to learning science and mathematics. By using sports as a creative vehicle for learning scientific and mathematical principles, the program is responding to the call for creating innovative and creative programs that provide access to the latest strategies in promoting science literacy. The following objective is pursued: To increase science and mathematics achievement of middle school students through the creative use of sports.

### **Theoretical Perspectives on Creativity and Innovation**

A current view of how individuals receive and process information proposes several independent forms of information processing, including logical-mathematics, linguistic, musical, spatial, creative, bodily kinesthetic, interpersonal and intra-personal (Gardner, 1993). Because individuals may differ in their specific profile of “intelligence’s,” education needs to be diverse in its offerings, both in terms of content and format of instruction.

The previous decade has witnessed many voices calling for reform in the teaching of science and mathematics. The federal government identified six National Education Goals that boasted that the United States would be first in the world in science and mathematics by the year 2000 (Culotta, 1990; Vinovski, 1996); and it is presently launching a series of exams in reading and mathematics to improve student achievement

and increase the status of American students in an ever-increasing global marketplace (Baker, 1997). Also, NO CHILD LEFT BEHIND legislation supports the mission of working to improve elementary and secondary math and science achievement (2001). Furthermore, policymakers, scientists and mathematicians have focused on change to develop the scientific and mathematical knowledge that will produce a healthy economy and maintain a meaningful democracy (Tate, 1994, Barlow, 1999). Most recently, under the current administration Science, Technology, Engineering, and Mathematics (STEM), is a focus of priority in funding and educational efforts (A Report from the Committee on STEM Education National Science and Technology Council, 2013; Gonzalez and Kuenzi, 2012). Reform, however, does not over overnight. Systemic reform must remain on the national agenda if we as a nation hope to attain the goals posed by the federal government and such professional organizations as the National Council of Teachers of Mathematics and the American Association for the Advancement of Science.

While the standards provide a map for improving the science and mathematics education of all students; the barriers urban schools face and the communities to which they belong are lacking the necessary resources to provide adequate science and mathematics programs. However, when examining the conditions of many urban schools and the communities to which they belong the reform necessary to reach such improved student achievement seems daunting (Barlow, 1999; Kozol, 2000 Darling-Hammond, 2010). The goal of lifelong learning in science, mathematics and technology is difficult to realize when many urban students have little access to the Internet and fewer textbooks, manipulatives and science equipment than suburban students. In particular, minority students (i.e., African-Americans, Latinos and women) and students from low socioeconomic backgrounds confront great challenges in choosing and performing well in science, mathematics and technology related fields (Hammrich, 1997; Hammrich, 1998; Hammrich et.al., 2000; Hammrich, 2002; Hammrich, 2008; Hanson, 1996; Oakes, 1990; Scheurich, et.al. 2010). Innovative and creative programs must provide access to the newest and most advanced tools in science, mathematics and technology. Furthermore, awareness of cultural differences, including learning style, need to be an integral part of the format, organization and content of an effective program. A current view of how individuals receive and process information proposes several (rather than just one) independent forms of information processing, including logical-mathematics, linguistic, musical, spatial, bodily kinesthetic, interpersonal and intra-personal (Gardner, 1993). Because individuals may differ in their specific profile of “intelligence’s,” education needs to be diverse in its offerings, both in terms of content and format of instruction, in order to be effective (Nieto, 1996; Bryk et. al. 2010). Sports are a means by which educators can address the forms of information processing mentioned above in both content and format.

This program supports and furthers this vision by providing mathematical and scientific concepts through the vehicle of sports. In doing so, the program is reaching students on multiple levels of intelligence’s and strengthening the education of students in science and mathematics by creating an unique and diverse atmosphere. The American Association of University Women (AAUW, 1998) publication “Gender Gap: Where Schools Still Fail Our Children” posits a variety of other positive affects that sports can have on children. They suggest that “sports participation in general is linked not just to

higher academic achievement but also to better physical and mental health and greater leadership capacity...Like classroom interactions, sports can either challenge or reinforce stereotypes about girls' and boys' roles" (p.74) and "...Unique capacity of school sports to prompt students and adults to question their own assumptions about gender (p.77).

Girls and minority youth in the late elementary through middle school years tend to struggle with self-esteem, physical fitness, skill development, goal setting, and problem solving (AAUW, 1998). Sports are one ideal mechanism to reach girls and minority youth during these uncertain years in which they explore their self-identities. Research links physical activity for girls to higher self-esteem, positive body image, and lifelong health (AAUW, 1998) and "...involvement in activities valued by school (athletics and the arts) leads to higher self-esteem, positive attitudes toward school, and less self-destructive behavior" (AAUW, 1998, p. 77). By using sports as a vehicle for learning scientific principles, the program is responding to the national call for creating innovative programs that provide access to the latest strategies in promoting science literacy.

This program seeks to address equity in science by providing students exposure to science through sports. The program is designed for sixth, seventh, and eighth grade girls attending urban middle schools and furthers the vision of its predecessor programs (Hammrich, 1997; Hammrich, 1998; Hammrich et.al., 2000; Hammrich, 2002; Hammrich, 2008). The program's vision is to increase students' positive attitudes, achievement, and exposure to science. What is unique is that the program teaches science concepts within the contexts of playing sports. By doing so, the program is successfully reaching students in a variety of ways and strengthening the education of students in science and mathematics by creating a unique and diverse pedagogical atmosphere.

## **Sports Program**

The Sports Program targets 6<sup>th</sup> -8<sup>th</sup> grade and focuses on the use of sports as a vehicle for science exploration. The program provides hand-on, inquiry based sports science activities that allow students to develop a repertoire of experiences, which can then be used as the foundation for learning scientific concepts. There are a total of 8 sport science modules that focus on science and mathematics concepts in life, earth, and physical sciences. Each module lasts for 5 weeks. The sports are golf, tennis, fencing, basketball, track and field, volleyball, health related fitness, and soccer. Program components include an in school program, after school program, teacher training, family education and summer camp.

## **Methods and Results**

The middle school students took individually administered pre and posttests covering skills and concepts inherent to the science and mathematics concepts they were exposed to in the sport. The science faculty on staff developed the instruments. The students' responses were open-ended allowing them to express their creative understanding of the content. A sample question includes the following examples: What does the word velocity mean? What is speed? What is a projectile? What is a trajectory? Each question was scored as correct or incorrect. The students' responses were open-ended allowing the students to express their understanding of the content. There were four questions for each activity. In reporting the scores for each activity the four

questions were grouped into either correct or incorrect for the entire concept. Pretests were administered at the beginning of the day's activity, and posttests were administered at the end of the day's activity. The pretest and posttests were identical instruments.

Gain scores were analyzed using a simple *t* test. Based on raw scores, the percentage of correct responses was used as the measure. The data consistently shows statistically significant mean increases from pre to posttest ranging from 27 to 60 percentage points ( $p < .001$  in each case). Looking at these gains in a different way, in every case, the lower quartile on the posttest exceeded the upper quartile on the pretest. All of the results from the after school and Saturday academy are summarized in Table 1.

Table 1: Pre- and Posttest Mean Scores and Standard Deviations

Sport Science	n	Pre-test: m	SD	Posttest: m	SD	Gain
Tennis-Geometry	52	29	22.1	84	17.3	55**
Fencing-Forces	40	38	21.4	86	14.2	48**
Basketball-Motion	32	27	16.5	77	23.3	50**
Golf-Mechanics	50	34	19.4	93	8.6	59**
Volleyball-Aerodynamics	48	28	19.4	77	22.5	49**
Soccer-Mechanical Engineering	35	28	19	88	12.2	60**
Track (field)-Aerodynamics	33	36	22.3	90	12.5	54**
Track(running)-Biomechanics	42	33	15.5	60	18.7	28**

*Notes.* Scores are raw scores, reported as a percent of correct response.

\*\*Denotes statistically significant gains ( $p > .001$ )

Additionally, we point out that of the sixth graders who completed the 6<sup>th</sup> grade program 67% returned as 7<sup>th</sup> graders. Furthermore, 54% of all students who completed the 7<sup>th</sup> grade program returned to participate as 8<sup>th</sup> graders. We believe that these retention rates speak volumes about our students' attitudes toward the program. Also with respect to students grades at the beginning of the year compared to the end of the year, *t*-test results showed that the students achievement scores (grades) in both mathematics and science increased significantly ( $p < .05$ ) during the year pre to post.

## Discussion

The only quantitative analysis of the *SISS* program we have been able to perform thus far are the analyses of simple gain scores of participants presented in the previous section along with their classroom grades in science and mathematics prior to and after participating in the program. With no potential comparison available as to what gains would be expected in a traditional approach to learning these concepts, we can draw no

strong conclusions regarding the effects of the program at this point. Thus, while these results are suggestive of a positive effect of the program, nevertheless they must be regarded as preliminary and not generalizable. However, we have ample anecdotal evidence that the program has had a positive effect on the lives of many of the students. The journals kept by the middle school students are one source of such evidence. In reflecting about the program, the features cited most frequently by these students is that they are having fun (“this is fun”), enjoying the program (“I really like participating in this program”), and learning science and mathematics (“I am learning about angles, measurement, and reflection”). Some of the students were able to see connections among the things they were learning in the program and what they are studying in school (“Throwing a ball is like learning about trajectory in school”). Another positive benefit of the program is that of the parents surveyed prior to and after their child’s participating in the program, parents increased their awareness of the connection of sport to science and mathematics by 60 percent (33% awareness at the beginning to 83% at the end of the year).

### **Implications**

Based on the significant increase in students understanding of science concepts through sports, it seems that sports provide a creative way to reach students cognitive understanding. While programs that address the equitable achievement for all students in science and mathematics are not new, using sports as a vehicle through which science and mathematics interest and achievement can be attained is unique. This approach bridges the application of concepts embedded in science and mathematics to the mechanics of performing a sport. Sports provide a unique and innovative approach to reaching students in a friendly atmosphere while learning concepts usually too abstract for them to grasp due to their limited experience and exposure.

Another unique feature of this project is the focus on middle schools science and mathematics. It responds to a dearth of attention to this level in public schools and fills a gap in the relevant literature. Middle school students often experience a drop in grades due to lack of organizational skills and difficulty adjusting to the requirements of several teachers. Learning science and mathematics principles through participating in sports will help students through this transition phase and will reduce the chances of “falling through the cracks”.

In conclusion, one project or one group of committed science and mathematics educators alone cannot tear down all of the barriers for students in the areas of science, mathematics, and technology. One set of dedicated teachers, mentors, or undergraduates by themselves cannot change the often negative course of employment or postsecondary education for future scientists or mathematicians previously described in the professional literature. But this project clearly is a start. On-going, pro-active involvement by the students themselves can both teach important science and mathematics skills, while simultaneously expanding new horizons through early transition awareness. What became evident in the program implementation was that (a) parental behavioral expectations for their children have important implications for their interest and achievement in science and mathematics; (b) intervention programs that are specifically designed to include role models have a strong and positive impact on students’ achievement in science and mathematics and assist to help identify with science and

mathematics as possible areas for study or employment; (c) program interventions evolve in stages of development, growth, and change. In order to promote the sustained success of students in science and mathematics, there must be a conscious effort to provide support for collaboration among schools, parents, and the community as ideas for useful strategies are developed, implemented, and evaluated.

What we have learned over the course of implementation of the program is that any such intervention program would be strengthened if designed so that: (a) students come to see the intervention program as an extension of their formal education; (b) older students serve as mentors and role models for younger students; (c) students are presented means for academic success; (d) students are presented with avenues towards possible careers; and (e) students are expected to succeed academically. Using sports to teach science is one possible approach to academic enhancement for students living in the urban environment. The results indicate that the program is serving the population of students in a positive manner.

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# **Detection of Text Coherence Breaks in EFL Reading: A Pilot Study of Eye-Tracking**

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## **Abstract**

This presentation reports an eye-tracking study that examined the process by which Japanese EFL learners detect a coherence break while reading a text written in English. A Japanese university student's eye movements were recorded while she read an experimental passage that included a coherence break. A qualitative comparison of eye movements between when she did and did not detect the coherence break demonstrated that an EFL learner's behavior in reading differed according to whether she noticed the textual inconsistency. The results showed that (a) when the EFL reader did not detect the coherence break, she simply read the text from beginning to end, with fewer regressions, and (b) when she succeeded in detecting the coherence break, her eyes moved from the end of the text to the earlier context to resolve the broken text comprehension. This suggests that eye-tracking measurements can be used to capture different reading processes in EFL learners according to the detection of text coherence breaks.

Key words: EFL reading, cognitive process, coherence breaks, eye-tracking

## **1. Introduction**

Comprehending a text involves not only identifying individual words and analyzing syntactic structures, but also monitoring the coherence of what has already been read and that currently being read, to construct a coherent mental representation (O'Brien, Rizzella, Albrecht, & Halleran, 1998). However, Ushiro (2010) demonstrated that Japanese-speaking readers of English as a foreign language (EFL) have difficulty maintaining the coherence of their own text comprehension when they encounter information that is inconsistent with their current understanding of the text (i.e., when a text coherence break occurs).

In this pilot study, we examined whether different reading processes in EFL learners during the detection of coherence breaks can be captured using eye-tracking measurements to investigate how readers solve problems that arise while trying to comprehend a text. Eye-tracking allows us to record and observe visualized data of human eye movements (Rayner, 1998). The latest research in second-language (L2) acquisition is increasingly utilizing eye-tracking measures to investigate lower-level language processing in L2 learners, such as lexical processing and syntactic parsing (see Roberts & Siyanova, 2013; Winke, Godfroid, & Gass, 2013); however, there is little research on how L2 learners maintain textual coherence in higher-level language processing. Thus, the current pilot study used eye-tracking measurements to examine Japanese EFL learners' higher-level reading processing, as in similar research on native English speakers (e.g., Camblin, Gordon, & Swabb, 2007; Rayner, 1998). Specifically, we qualitatively analyzed the eye movements obtained from a Japanese university student while she was reading an experimental passage that included a coherence break.

## **2. Method**

### **2.1 Participants**

Initially, 10 Japanese EFL graduate students volunteered to participate in the pilot study. The participants were first- or second-year English education majors who had studied EFL since age 13 in formal education in Japan. All participants had corrected-to-normal vision. However, we focused on a single participant's reading behavior in this article because she showed the most typical process of both successful and unsuccessful detection of coherence breaks.

### **2.2 Apparatus**

Eye movements were recorded with the Mobile EyeMark Recorder System (EMR-9), a contactless eye tracker manufactured by NAC Image Technology. Passages were presented in 14-pt Times New Roman font on a 21.5-in iiyama computer monitor at a distance of 75 cm from the participant's eyes.

### **2.3 Materials and Procedure**

The experimental session included the following four phases: (a) the first reading, (b) oral interview about the first reading, (c) the second reading, and (d) oral interview about the second reading. The participant read two short passages (a practice set and an experimental set) in English while an eye-tracker recorded her eye movements (Figure

1). After reading these passages, the participant was interviewed and the coherence break was explained to her by the experimenters. Afterward, she read the experimental passage again. The experimental session lasted approximately 30 min.



*Figure 1.* The experimental setting.

The experimental passage was adapted from the study by O'Brien et al. (1998, p. 1210) with minor modifications. Specifically, very low-frequency words were replaced by easier equivalents, and some sentences were eliminated for the eye-tracking measurements. The main passage used in this study is shown in Table 1.

Table 1

*An Experimental Passage*

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Bill had always enjoyed walking in the early morning. This morning was no exception. During his walks, he always stopped to talk with some of his neighbors. Bill had just celebrated his eighty-first birthday. He did not feel as strong as he did twenty years ago. In fact, Bill had begun using a long thin stick to help him during his morning walks. He could not walk around the neighborhood without taking a lot of rests. Today, Bill stopped to talk with Mrs. Jones. They were talking about how hot it had been. As Bill was talking to Mrs. Jones, he saw a young boy lying in the street. He was seriously hurt and crying. Bill quickly ran over and picked the boy up. Bill carried the boy to somewhere safe. While Bill helped the boy, Mrs. Jones ran into her house to call an ambulance. Bill kept the boy calm and waited until help arrived. (156words)

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In this passage, readers are required to update their text comprehension during the time course of reading because the content of the prior context (e.g., *He could not walk around the neighborhood without taking a lot of rests.*) is not coherent with the situation described in the sentence *Bill quickly ran over and picked the boy up.*

After reading this passage, the participant performed a coherence-break detection test. She was orally asked whether she had noticed anything strange in the passage (i.e., coherence-break detection), and what made the passage strange. As she had not recognized the inconsistency in her text comprehension, this first reading was regarded as an unsuccessful pattern. We informed her that there was a coherence break in the passage, and then asked her to read the same passage again. When the coherence-break detection test was conducted again after the reading, she stated that the passage did include a coherence break and appropriately identified the sentences that caused the lack of coherence in the passage; her second reading was regarded as a successful detection of the coherence break.

### **3. Results and Discussion**

As noted above, the participant's answers to the coherence-break detection question indicated that she had not noticed the coherence break in the passage at all during the first reading; her answers after the second reading showed that she did notice the coherence break that time, and was able to identify the cause of the incoherence.

We qualitatively compared the participant's eye-tracking data obtained during the first and second reading (Figures 2 and 3) to investigate the differences in processes between the successful and unsuccessful detection of a coherence break. The most remarkable difference appeared in the participant's regressive eye movements. Specifically, the data from the first reading (in which the participant did not detect the coherence break) showed that the participant read the text from the top to the end with few regressions. On the other hand, in the second reading, the participant's eyes clearly moved from the end of the text to the earlier context (e.g., *He could not walk around the neighborhood without taking a lot of rests*). In addition, the participant gazed at this context longer during the second reading than the first reading.

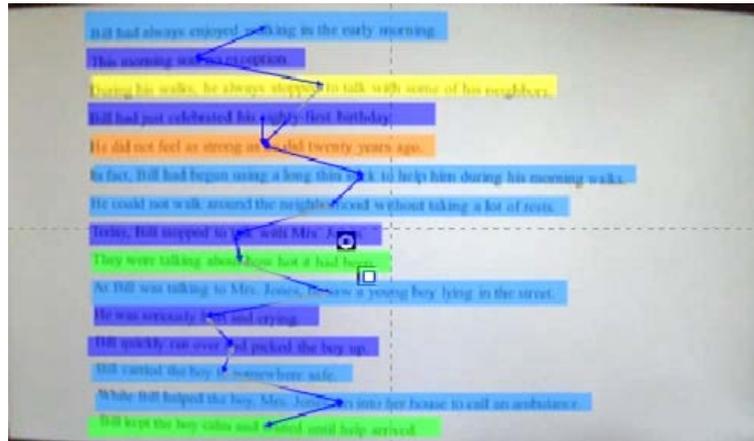


Figure 2. Eye-tracking data during the first reading.

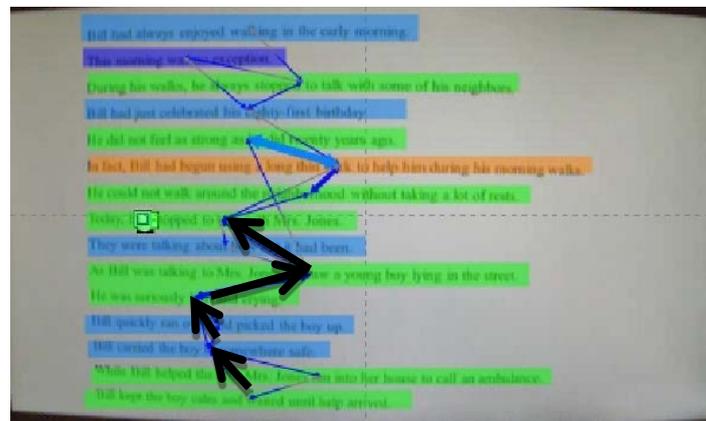


Figure 3. Eye-tracking data during the second reading.

In summary, the oral interview data showed that the participant detected the text-coherence break successfully only in the second reading, and the eye-tracking data showed that she carefully reread the earlier context of the passage during the second reading. This suggests that she attempted to resolve the detected coherence break by reanalyzing the prior context. Therefore, the present study confirmed that eye-tracking data during reading can reflect EFL learners' successful and unsuccessful reading processes in terms of detecting a text coherence break.

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**Title of the Submission:**

Interactive Whiteboard Use at Secondary Schools in South Australia: What teachers have to say?

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**Abstract**

Secondary schools in South Australia are investing heavily in Interactive Whiteboards (IWBs) to equip the classrooms with this technology, but this decision is predominantly based on the findings of the IWB research studies done in other countries and that is also mainly at the primary school level. There is a serious lack of research studies done to explore the IWB use at the secondary school level in South Australian context. This paper reports the findings of a qualitative study which included 16 secondary school teachers from South Australia who use IWB in their teaching. The study which was the part of a bigger research investigation was conducted with the purpose to explore the factors/reasons behind the decision of South Australian secondary school teachers from different subject-areas to start using IWB technology, the barriers/constraints faced by them in using this technology in their teaching, their classroom interactions using IWB and their perspectives about the impact of IWB on the learning of the students. The findings provided in-depth understanding of the point of view of teachers regarding the use of IWB at secondary school level and its impact on the student learning along with highlighting some practical examples of the possible ways of using IWB in different subject-areas. Various factors were identified which can be used as guidelines by the schools to encourage the use of IWB and to ensure the successful adoption and integration of this technology into the secondary school level of education.

Grade 5 Students Viewing a Digital Learning Object to Understand Particle Models of  
Solids, Liquids, and Gases

Science Education

Poster Session: Submission ID 563

This presentation explores Grade 5 students' understanding of the particle model of solids, liquids, and gases after they viewed a digital learning object created by the authors. Data includes students' responses to on-line questions and their subsequent efforts to self-generate and explain their own particle models. Results have implications for the design of digital learning objects and support needed by students to decode multiple models.

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## **Grade 5 Students Viewing a Digital Learning Object to Understand Particle Models of Solids, Liquids, and Gases**

### **Abstract**

The aim of this study was to explore 40 (22 male; 18 female) age 10-11 students' ability to: a) distinguish among particle models of solids, liquids, and gases embedded in a digital learning object (DLO), and b) self-generate and explain their own particle models for solids, liquids, and gases. Students worked in pairs to view a digital learning object drawn from a series of six DLOs created by the authors that featured text, dynamic models, and virtual characters intended to draw attention to the movement, spacing, and holding of a variety of particle models of solids, liquids, and gases. Data consisted of the student-pair responses to on-line questions, and after viewing the DLO, their individual work to complete a worksheet. Responses to on-line questions showed that nearly every student-pair identified particle movement, holding, and spacing as important to distinguishing among models of solids, liquids, and gases. Individual self-generated models drawn on the worksheet tended to show accurate differences among particle models of solids, liquids, and gases. The students' accompanying explanations of their self-generated models, however, showed that many students only focused on a subset of salient features (e.g., spacing only) needed to distinguish among states of matter. Results have implications for digital learning object design and the kinds of support needed by students to decode the salient features of complex dynamic particle models.

Grade 5 Students Viewing a Digital Learning Object to Understand the Behavior of  
Water Particles in the Solid State

Science Education

Poster Session: Submission ID 564

This presentation explores Grade 5 students' ability to view a digital learning object created by the authors and understand the significance of the polarity of water molecules to the density of water in a solid state. Data includes students' responses to on-line questions and their self-generated particle models of water. Results have implications for the design of digital learning objects and support needed by students to understand how solid water differs from other solid substances.

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## **Grade 5 Students Viewing a Digital Learning Object to Understand the Behavior of Water Particles in the Solid State**

### **Abstract**

The aim of this study was to explore 38 (22 male; 16 female) age 10-11 students' ability to view a digital learning object (DLO) and: a) notice that the spacing between model water particles in a solid state differs from other solid substances, b) understand the significance of the polarity of water molecules to the density of solid water, and c) self-generate and explain their own particle models for liquid and solid water. Students worked in pairs to view a digital learning object drawn from a series of six DLOs created by the authors that featured text, dynamic models, and virtual characters intended to draw attention to how the spacing of solid water differs from other substances in the solid state and how this can be explained by considering the polar nature of water molecules. Data consisted of the student-pair responses to on-line questions, and after viewing the DLO, their individual work to complete a worksheet. Responses to on-line questions showed that students were challenged to distinguish between how water in the solid state differed from other substances in the solid state and had difficulty noticing the spaces among water molecules in the solid state. Students, however, were confident about how the negative and positive ends of a water molecule interacted with other water molecules. Individual self-generated models of particles comprising solid and liquid water showed that previous lessons about differences between particle models of other solid and liquid substances were robust and used to depict water particles. Results have implications for digital learning object design and the kinds of support needed by students to decode the salient features of complex dynamic particle models of solid water that differ from their existing ideas about particles comprising other solid substances.

## **Health and Physical Education: The Need for School Leadership**

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## **Abstract**

Research has indicated that the majority of parents and teachers would like to see health and physical education programs as mandatory components of the regular school day (KidsHealth, 2013; Physical and Health Education Canada, 2013). However, despite considerable reform occurring in schools and the world-wide understanding of the problems of obesity facing children, many students are still provided limited exposure to health and physical education programs. For example, the Centers for Disease Control and Prevention (2010) reports that nearly half of high school students in the United States have no physical education class in an average week. One might conclude that despite the health issues facing children and youth, there is a clear lack of support or promotion of health and physical education curricula and lesson delivery. Physical education programs have begun to shift from being dominated by traditional, competitive team sports to individual fitness and “lifetime” activities (Adams, 2013). Health programs are no longer a collection of ideas presented in individual lessons but are recommended to be part of a coordinated effort to promote comprehensive health and wellness programming (Berg, Hickson, & Fishburne, 2010). Such a shift in thought has challenges though. Different approaches to programs are often associated with an increase in the costs of funding for new and different instructional resources and/or equipment and creative scheduling may be required to ensure lesson frequency or access to off-site programming (Adams, 2013). As instructional leaders, school principals are ideally placed to ensure that teachers are provided with the resources for the delivery of effective health (Berg, Hickson, & Fishburne, 2010) and physical education programs (Lambert, 2000). Through such things as: staff development; opportunities for collegial and professional dialogue; critique of program planning and lesson delivery to ensure quality instruction and assessment practices; and the provision of resources to support activity and learning, school principals can truly become leaders and advocates of health and physical education programming.

## **Health and Physical Education: The Need for School Leadership**

Research has indicated that the majority of parents and teachers would like to see health and physical education programs as mandatory components of the regular school day (KidsHealth, 2013; Physical and Health Education Canada, 2013). This is not a new issue, as Marzano and Kendall (1998) declared over a decade ago that when adults were asked what was important for school graduates to be taught prior to graduation, they responded with the answer of “health.” However, it is not unusual whenever large-scale test results are released, that there is an immediate demand from a variety of sources for schools and teachers to direct programming and educational experiences for students on activities that re-focus on the basic elements of curriculum and reduce time spent on non-essential activities.

Such a direction, if followed, would have a tremendously negative impact on subject areas such as health and physical education, the very programs that parents and teachers strongly believe are important for children and youth. It could also be argued that the potential impact on the health and wellness of children and youth would be catastrophic. For example, the declining health and wellness of children and youth in recent years has resulted in researchers declaring that, for the very first time in history, the present generation of children face a shorter and a lower quality of life than their parents’ generation. For those who happen to be parents, this is a very sad legacy to leave to children.

However, instead of blindly accepting this outcome, there may well be some things we can do to offset this pattern and cause a different outcome for our children and youth. Schools and

teachers are the “front line” environments and people that can offer hope for change. This paper addresses some ideas for consideration.

### **Marginalization of Health and Physical Education Programming**

Lounsbery et al. (2011) contended that physical education is a subject area that is often marginalized in our school systems. This is often displayed through a lack of curriculum time allocation and inadequate resourcing. Therefore, physical education programs are challenged in contributing to public health goals. For example, the Centers for Disease Control and Prevention (2010) reported that nearly half of high school students in the United States have no physical education class in an average school week. One might conclude that despite the health issues facing children and youth and the world-wide understanding of the problems of obesity, there are many students who are still provided with a limited exposure to health and physical education programming, and there continues to be a clear lack of support or promotion of health and physical education curricula and lesson delivery.

However, Berg, Hickson, and Fishburne (2010) suggested that the school environment is particularly well-suited to promote health and wellness with students. Schools are vital locations for such programming as students spend a significant portion of their lives there. Therefore, Berg et al. further declare that school principals have the responsibility to ensure that health programming is well-planned, based on student needs, and is current with emerging concepts and issues.

## **The Role of School Leadership**

Leidl (2007) suggested that the strength of a learning community is determined by the strength displayed by the school leadership personnel and that the responsibility for curriculum implementation falls under the direct responsibility of school principals. As principals are often referred to as “instructional leaders” in their school environments, Lambert (2000) contended that they must attend to the development of the teachers in their schools and evaluate and support the teaching effectiveness of those teachers. Therefore, school leadership personnel are vital elements for any possible change to occur at the school level. Hence, they are necessary change agents. Without the support of school leadership personnel, subject areas such as health and physical education are most likely to continue to be marginalized to a point where their very existence in schools will no longer be debateable, as they will have already disappeared.

## **School Leadership in Health and Physical Education**

Lounsbery et al. (2011) suggested that the support of school leadership personnel is most important to physical education programming and, wherever possible, school principals or assistant principals should be encouraged to champion the program at all times. This is a critical issue as there continues to be a decentralization of power in the world of education that has resulted in school principals being key decision makers in programs such as health and physical education being cut, maintained, or prioritized (Stevens & Carpenter, 1998). Bisceglie (2008) in summarizing the position of school leaders stated that despite being pressured to improve test scores, retain good teachers, and manage dwindling budgets, it is hard to imagine a single

school leader who is not in favour of nutrition and fitness. The issue is how to do so when already being expected to accomplish so much. The competition of pressing issues and priorities for school leaders is a major factor that seems to hinder support for programming such as health and physical education that can support student health and wellness.

## **Considerations for School Leaders**

Although there are likely challenging obstacles that school leaders need to overcome, these challenges are not insurmountable. We would like to suggest four areas of focus that could help to facilitate the kind of change necessary in schools.

1. ***Be Part of Programs.*** School leaders should be active within the health and physical education programs in their schools. They need to spend time in classrooms, school gymnasias or on the playing fields and playgrounds to observe the instructional practices of their staff members. Health and physical education programs need to promote knowledge and understanding that clearly focuses on life-long healthy activity. Without visiting classrooms and gymnasias, school leaders cannot guarantee that programming exists in their schools. While visiting classrooms to observe mathematics or language arts teaching is still vitally important, school leaders can also easily observe these other subject areas.
2. ***Develop Knowledgeable Staff.*** As with all subject areas, health and physical education programs in schools need to be taught by qualified and enthusiastic teaching staff. Although it might be argued that specialist subject area teachers are required, in today's financial situation that schools are placed in, this might not be possible. Therefore, school leadership personnel should encourage and provide opportunities for all staff members to participate in

professional development opportunities to improve their teaching or understanding of health and physical education programming. This might take the form of conference attendance or 15 minutes of professional development in a regular school staff meeting. The fields of health and physical education have changed considerably in recent years. Teacher knowledge, skills, and attributes need to match such change (Lambert, 2000). For example, in physical education, children and youth are now frequently drawn to activities beyond the traditional sports that have typically been part of the school experience. Failure to recognize such a change can only further alienate children and youth from participating in physical activity. Therefore, teachers need to understand and be prepared to offer programming that not only meets the requirements of educational mandates but, and perhaps more importantly, meets the interest of children and youth.

3. **Support Curriculum Time.** School leaders can assist health and physical education programming by ensuring that these subject areas figure prominently in a child's weekly timetable, if not daily schedule. The US Centers for Disease Control and Prevention (2010) has clearly determined that research has indicated that physical activity can assist in academic achievement, including standardized test scores. Equally, research has shown that healthy lifestyle promotion and increased levels of physical fitness not only supports school achievement but also helps to off-set future health issues such as heart disease, type 2 diabetes, several types of cancer, and osteoarthritis.

4. **Ensure Comprehensive Programming.** School leaders can work to ensure that health and physical education programs are integral parts of a Comprehensive School Health (CHS) program. There are countless organizations available to assist CHS programs in today's

schools and with the constant addition of quality educational resources online, school leaders can help provide a variety of healthy, active messages to the school community. For example, a “Physical and Health Education Fair” can aid in school communities coming together whilst assisting in the learning process for children and youth on a number of topic areas (Bradford, 2013). School principals can assist in the delivery of active, healthy messages through morning announcements, weekly health tips on the school website (e.g., importance of daily physical activity), and monthly newsletter entries (e.g., information of the physical education program of studies). These are simple strategies that can help educate the school community on active, healthy living. Other school-wide initiatives can include, (1) school bulletin boards that are consistently updated to ensure quality messages about active, healthy living, with an inspiring quote from the school principal, (2) monthly homework assignments for parents-guardians and their children that includes a statement from the school principal (e.g., “This month, try to join your family for a 30-minute walk three 3 days a week.”), and (3) a morning 20-minute dance session led by the school principal and the staff members that gets everyone moving at the start of the day (e.g., first school day of the month). Strategies such as these will help demonstrate to the school community that the school leadership team views health and physical education as an essential component to the learning environment. Playing a part in student learning and ensuring healthy, active messages are being communicated throughout the school day are important teaching tools (Hickson & Bradford, 2010). Therefore, carrying out strategies such as the ones described in this section will send strong messages to the school community that the school leadership team believes in the development of active, healthy lifestyles!

## **Concluding Thoughts**

Physical education programs have begun to shift from being dominated by traditional, competitive team sports to individual fitness and “lifetime” activities (Adams, 2013). Health programs are no longer a collection of ideas presented in individual lessons but are recommended to be part of a coordinated effort to promote comprehensive health and wellness programming (Berg, Hickson, & Fishburne, 2010). Such a shift in thought has challenges though. However, as instructional leaders, school principals are ideally placed to ensure that teachers are provided with the resources for the delivery of effective health (Berg, Hickson, & Fishburne, 2010) and physical education programs (Lambert, 2000). Through such things as: staff development; opportunities for collegial and professional dialogue; critique of program planning and lesson delivery to ensure quality instruction and assessment practices; and the provision of school-wide planning to support activity and learning, school principals can truly become leaders and advocates of health and physical education programming.

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## **HIEC: Final Proceedings Submission due date October 17, 2013**

- 1. Title:** Student Learning and Best Practices in one Professional Development School Partnership
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### **6. Abstract:**

Student learning is one of the primary goals of Professional Development Schools (PDS). Over the years, research has been conducted to address the many aspects of PDS, yet very little has been done to document the impact on student learning. Recent increases in the demand for accountability have caused schools and teachers to evaluate programs and their impact on student learning.

The National Council for Accreditation of Teacher Education (NCATE) released the Blue Ribbon report in 2011, conveying the idea that when designing clinical teacher preparation programs, student learning should be at the center. In 2012, the Breaults found limited research on pre-K-12 student learning in Professional Development Schools. There is compelling demand for research that examines student learning in Professional Development Schools.

PDS are established through collaborative working relationships between the university and school site. PDS relationships are, by nature, humanistic making it difficult to assess

student learning using standardized testing as a means of measurement. One of the purposes of this case study is to provide a model for other PDS partnerships to assess student learning.

In this case study, thirteen eighth grade students, five cooperating teachers, nine pre-service candidates, three supervisors, and two site principals were interviewed for their perceptions of student learning in their Professional Development School partnership. The participants were asked to define student learning and questions regarding best practices professional development, and challenges in learning within the PDS model. Documents and observations were also conducted to provide a triad of data to have a broader examination. In coding all the interviews, documents, and observations, categories were formed and themes emerged from those categories. In the preliminary findings, one theme that emerged through all five participant groups was one regarding one on one time that is provided to students when working with pre-service candidates. Another preliminary finding was noted as all five participants groups had discussed the ability to have another person explain, or reteach differently, the content and understanding when using different language or visuals to explain the content. The perceptions of these participating groups confirm that Professional Development School partnerships should be measured and evaluated as to the significance they have on student learning in each of their partnerships.

Title of Paper: Capturing the Essence of the Change Process in Educational Policy

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Topic area: Educational Policy and Leadership, Special Education & Systems Change

Presentation format: Paper Session

Presentation Description:

A new divergent research method is the vehicle used to unfurl new findings for actionable plans in the study of systems change processes in the field of parent involvement, autism and special education. Highlights include recommendations and practical insights for concerned school, parent, community, and policymaking groups facing the growing crisis of autism. The new mixed method research model molded for this specific study extended inquiry into the role of parent involvement in their schools and communities. The study was realized through a volunteer organization, Families for Effective Autism Treatment (FEAT) and their subsequent contributions to promoting effective autism services through foundational legislation, research, support communities, and school programs. An examination was conducted of how the group's efforts were initiated and their ongoing activities to advocate for those with autism and with other disabilities. Factors related to past, present, and ongoing change processes were compared and analyzed. The first phase of this research captured, through qualitative interviews with the founding members, factors related to effective educational change. The results were developed into an adapted systems change model. The focus of the second phase used those factors in quantitative surveys with second and third waves of participating parents of FEAT. Additionally, the respondents were asked qualitative questions regarding the anchoring of factors related to an effective educational change process. Research results were provided in the context of factors that perpetuated the continued implementation of change throughout the community. What had begun as a

small support group of six parents and professionals, eventually evolved into a dynamic volunteer parent driven organization whose efforts reached out nation-wide to more than 10,000 members in the autism community. The final research recommendations provide an action plan for all groups seeking to address the growing needs of children with autism and their families. Information gathered from the research points the way for those desiring to become part of a ground swell of groups and individuals dedicated to seeing lasting change in educational policy and programs in the autism community and beyond. The new research model continues to hold significance for those who seek to conduct research in new and inventive ways.

## HICE Proceedings Submission

1. The Hawai‘i Preschool Positive Engagement Project: Data Collection and Dissemination for Communities in Hawai‘i
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6. Abstract:

When implementing research or program grants within Hawaiian communities, to be effective, data collection efforts must understand and address the community’s attitude toward the implementer. The Hawai‘i Preschool Positive Engagement Project seeks to positively engage with the community through culturally relevant ways to connect with people, recognize strengths, and provide information and resources. Successful ways of culturally relevant data collection and dissemination with Hawaiian communities almost always include initiating relationships with humility. This involves acknowledging that the community is the expert and we are the learners, and that we are asking to receive as much as we are proposing to give. HPPEP strives to engage with all participants respectfully, being sensitive to any resistance, honoring self-determination, and seeking regular feedback. It is through personifying these principles in the field that we can hope for maximized and accurate data collection from our participants and partners.

Dissemination of data that we receive from the community plays a crucial role in building and solidifying trust with those who participate in HPPEP activities. This project has dedicated substantial resources to enable quick analysis of data in order to share results with participants as soon as possible. This type of “giving back” can make the community feel valued, allows them to provide additional wisdom on interpretation of results, and strengthens the partnership to work towards community-sustained interventions that provide lasting benefits to program and participants alike.

## Hawaii International Conference on Education 2014

### **Title of the submission**

Hawai'i Preschool Positive Engagement Project: Positivity, Productivity, Responsiveness, Flexibility, and Humility in Action

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### **2-3 sentence description of your presentation which should not exceed 75 words in total.**

#### **Please note that you are still required to send in a separate abstract/paper.**

The Hawai'i Preschool Positive Engagement Project (HPPEP) aims to bring out the best in students, parents, and teachers by focusing attention on what's going right and providing research-based services. Learn how HPPEP was created based on feedback from early educators, how values are woven into our services, and initial data results of this innovative project.

### **Abstract**

The Hawai'i Preschool Positive Engagement Project (HPPEP) is implementing a combination of research-based and innovative interventions intentionally grouped to address needs that are significant in magnitude: 1) Improvement of early learning outcomes for at-risk preschoolers, 2) Positive parent engagement, and 3) Professional development of preschool teachers and staff. The project is training, implementing, evaluating, and disseminating results in order to help inform the future design of effective early education programs, specifically those that serve high percentages of Native Hawaiian students. HPPEP just began its third and final year of implementation.

The project objectives are to 1) Improve early learning outcomes for at-risk preschool students through a unique grouping of research-based school and home interventions, 2) Build protective factors of families with preschool students by facilitating parental positive engagement through the use of a research-based home intervention and 3) Address the professional development needs of teachers and staff in the field of Early Childhood Education, in which Native Hawaiians are underemployed, by building knowledge of existing behavior and classroom management strategies. Culturally relevant training and support is provided for classroom components Check-In Check-Out and Positive Behavioral Interventions and Supports

and parent component First Step to Success homeBase Plus, including book making using Storytelling for the Home Enrichment of Language and Literacy Skills. The project's values of Positivity, Productivity, Responsiveness, Flexibility, and Humility are intentionally woven throughout implementation of services.

Paper Title: Two different systems of higher education - U.S. and Italy:  
The sugar and fist approaches, learning from the comparison

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### **Abstract**

The idea of writing this paper was born from faculty exchanges between the California Polytechnic State University (CalPoly), San Luis Obispo, U.S. and the University of Camerino (UNICAM), Ascoli Piceno, Italy, that occurred in 2011 and 2013.

Teaching the same subject on the other side of the world and to students with a very different cultural background has been not just an exciting experience for the faculty involved, but also an opportunity to compare two very different systems.

Furthermore this paper intends to be a mean by which this interesting experience may not remain an end in itself; instead it wants to become a useful and fruitful exchange of cultural knowledge, practical skills and teaching methodology.

This paper, written by one professor from CalPoly and one from UNICAM, Enrica Lovaglio Costello and Monica Rossi, compares the higher education systems in CalPoly and UNICAM in particular, extending the analysis to the U.S. and Italy, in more general terms. A list of possible improvements, that incorporates the strengths of the two systems, is drawn from the detailed examination of each of the main differences, such as students' level of education at point of entry, class size, image and pedagogical approach of the professors, facilities, cost of education, enrollment and graduation rates.

**Keywords:** Higher education, Italian university, American university, intellectual struggle

## **Introduction**

Today the higher education system is at the verge of a technological revolution, thanks to the Internet, technological advances (with the possibility of delivering lectures through video/screen casting) and new pedagogical models. It is foreseeable that universities will be delivering their lessons beyond the boundaries of the physical classroom and across continents. Currently “massive open online courses,” or MOOCs, are delivering classes in remote places and to a varied audience; these MOOCs are free, accessible to all economical levels of society. How can we structure an improved educational system that also crosses cultures and continents? What are the main traits and strengths new system must possess? It is an incredible chance, not to be missed, these are indeed promising times for education.

In the perspective of an educational model that in part takes advantage of the benefits of globalization, allowing students from all over the world to access the classes, and in part retains the individuality of its culture, we must know the differences among those systems and propose compromises that can be adopted at a global scale. This paper is focusing on the Italian and the American higher education systems.

## **The differences between higher education in Italy and U.S.A**

The main differences between higher education in the two countries relate to: cultural background of students, number of students for each teacher, relationship between students and teacher, facilities, cost of education, enrollments and graduation rates and students attitude toward learning and earning such knowledge.

- 1) *Cultural background of students.* There is a complete absence of general education (GE) courses in the Italian university; the classes are all focused on the field of expertise of the chosen major. The general education in Italy is taught, and well, in the five years course of studies during high school, where the classes of 20-30 students are closely monitored and challenged. High school in Italy is as challenging as college in term of studying, much easier in the realm of self-discipline. There are three different kinds of high school: Liceo, that is intended for students who'll continue into college, Istituto tecnico and Istituto professionale, that are vocational schools and intended for students that will enter the work force right after high school. For each of these kinds of high schools there are variations: e.g. “Liceo” can be “classical” (humanities driven), scientific, artistic, linguistic, etc., depending on the students' inclination. The Istituto tecnico prepares the students to

enter the administrative work force (administrative assistants and alike positions), the Istituto professionale prepares the students with hands-on expertise, such as plumbing, electricians, etc.

- 2) *Number of students and perception of the teacher.* Another aspect where U.S. and Italy differ greatly is the organization of the university and the figure of the professor. The lecture classes in Italy are attended by 100+ students, the labs are attended by 50 to 60 students; with such a crowd in each class, each student has to take the education in her/his own hands. Faculty members never “hold the student’s hand”, in part because of the large number of students in the class, in part because hand-holding is considered acceptable in high school, not in college. For handholding we mean closely monitoring each student and giving constant feedback, through grading and direct communication, of the growth of the student throughout the class. Italian classes often do not require attendance; students are required to show up at the final exam with the needed knowledge, there are no demands of intermediate tests (such as assignments, homework and midterms in the U.S.). There are design critiques, which the student can benefit from, but those are not required in order to pass the class.

Only 20-30 students attend the American college level classes, a part of the general education courses; attendance is required and handholding is not only the norm but also the students’ demand and expectation. One would think that in such small classes the faculty could encourage the learning of self-discipline, intellectual freedom and independence; unfortunately such task is not part of the curriculum and classes’ learning objectives; the American professor must cater to and please the student in order to earn good students’ evaluations. American state colleges treat students in equivalent manner of the Italian high schools: the students are given small assignments and various grades throughout the course of the class, they are constantly waiting for and expecting the faculty’s directions, showing very little decision making and self discipline. The Italian students have and want total freedom; the American students have and want constant direction.

- 3) *Relationship between students and teacher.* Sugar coating the communication with the students is another sad outcome of the professor having to earn good students’ evaluations in the public universities’ higher education system in America. Every critique

in the U.S. seems to start with “Good job!” no matter the quality of the work, mainly because the students’ evaluations determine if the faculty will become tenure or promoted; pleasing the students, catering to them and at times making the class less demanding generates positive evaluations. Direct and honest communication is not well received by the American students, which will consider honesty and directness as “rude”, hence the need of sugar coating. The Italian faculty is respected, at times feared and admired despite the curt communication methods; the students have the belief that if the “professore” earned that position he must be worthy of it, he must be respected and valued for such achievement. The professore’s attitude is to prepare the students for the real world; no time is devoted to soften critiques and embellished communication, especially in large classes of 50, 100 or 200 students. The American sugar coating methods are replaced by the firm fist of the “professore”; for the Italian students the tough approach is part of the leaning and the growth: the ability to take criticism and endure the hardship of it; it is considered training for the professional world.

- 4) *The perception of intellectual struggle.* Psychologist Jim Stigler has spent years researching how a different attitude toward struggle will generate very different learning outcomes. He compares learning in the U.S. to learning in Eastern cultures, like Japan and China; in an interview with NPR (National Public Radio) Stigler states: “From very early ages, we (Americans) see struggle as an indicator that you're just not very smart. It's a sign of low ability. People who are smart don't struggle. They just naturally get it. It's our folk theory. Whereas, in Asian cultures, they tend to see struggle more as an opportunity.” The Italian higher education system is built to put the students through the high pressure of intellectual struggle; students demand that challenge because it is considered indispensable in order to achieve professional growth and obtain the few jobs available, once graduated; faculty members are appreciated based on their ability to challenge students and promote intellectual struggle, independence, determination to succeed and self-discipline. This is the main reason why handholding is not accepted in Italian universities. Just as Stigler demonstrates through his research, the American state university system gives a negative connotation to struggle; it is visible most in the students’ evaluations, which measure the instructor’s ability to make everything clear and unchallenging for the students. This idea of “clear” to us is key to the presence or lack of intellectual struggle. We quote Stigler once again, in the Japanese classrooms that he has

studied “teachers consciously design tasks that are slightly beyond the capabilities of the students that they teach so the students can actually have the experience of struggling with something just outside their reach - and then, once the task is mastered - the teachers actively point out to the student that they were able to accomplish it through the student's hard work and struggle.” In order to evaluate the instructor American students are asked: “How clearly were your responsibilities for this course defined?” and “How do you rate agreement between the course objectives and lesson assignments?”

The faculty member must be clear in outlining how much work is asked of the student and what needs to be learned, preventing the possibility of a struggle beyond what has been just taught, very little expectations of individual research and exploration beyond what is spelled out by the faculty member is shown. Students are told what to do and earn a grade base on it, why would they venture beyond their comfort zone to find exceptionality?

Another concrete example of the difference among the Italian and American state universities in this regard is the fact that American classes must have a syllabus, in which every component taught in the class is listed and explained, with detailed learning objectives (sometimes shown for the entire class, and then again for each topic taught in such class); Italian classes most often do not require a syllabus, and faculty members leave learning objectives open in order to challenge the students in term of going beyond what's explained in class; individual research and experimentation is expected of each student, it would not be college level education otherwise. In this regard the Italian university is like the Eastern culture, analyzed by Jim Stigler: “it's just assumed that struggle is a predictable part of the learning process. Everyone is expected to struggle. And, in a way, struggling is a chance to show that you have what it takes emotionally to overcome the problem by having the strength to persist through that struggle.”

The main author of this paper earned an undergraduate degree in architecture in Italy, and studied urban design in France; when she enrolled in a graduate degree in multimedia engineering in the U.S. she was asked, during the first week of classes, to use Java and C++ to reverse a string in the communication between a server and a client using TCP and UDP protocols. Many of her classmates had a bachelor degree in computer science; she had no knowledge of programming. She ended up completing her two years Master's Degree in four consecutive quarters, while her classmates where still working at it, thanks to her determination to overcome each problem through a struggle. We believe

that if we could add this trait to the excellence of the education in America we would truly have a nation of over achievers, sophisticated thinkers and problem solvers.

- 5) *Facilities.* In Italy the specific majors occur in separate buildings scattered throughout a city, contrary to the large U.S campuses with multiple buildings at walk able distance, each teaching different fields of expertise. In Italy even the physical structure of the university does not lead to cross-disciplinary education: taking classes in other disciplines other than the one hosted in that particular building, where a particular major is taught, is virtually impossible because of the physical distance among buildings. The benefit of this aspect of the Italian system is stronger specialization; the shortcoming is lower cross-disciplinary learning as well as the expectation that a teen-ager would already know which professional path to take in life: at 13 years old a student chooses which “field of expertise” to pursue in high school, if scientific, artistic, linguistic or classical studies, and that sets the choice for the college major and the future career.
- 6) *Cost of education.* The cost of state education in Italy is quite low, college tuitions amount for about 1000 euros (currently \$1,300) per year; part of the Italian taxes help support the citizen’s education (as U.S. taxes help pay for education in state colleges and universities). In Italy the common practice of residing in the childhood home while in college also contribute in keeping education affordable, there is no shame in living with the parents during college. In United States the cost of education is quite high; in state universities college tuitions can range from \$5,000 to \$10,000 per year, for private universities much more. The average cost of a year on campus is \$27,000. Most Americans leave the parents’ home around 18 years of age; there is a stigma of failure for living with parent in adulthood.
- 6) *Number of students who enter colleges and graduate.* The percentage of Italians obtaining the “Laurea” degree has always been very low, at the point that in 1999 the government established a 3+2 system by which a “short laurea” can be obtained in three years (instead of the traditional five) and a graduate (specialized) degree is achieved in an additional two years course of studies. As in a Darwinian selection, only the strongest in Italy achieve a college degree, the others become the work force needed for the country to function (plumbers, electricians, tradesmen, etc.).

The data provided in 2013 by the inter-university consortium AlmaLaurea shows that only 30% of 19 year old Italians go to college and 20% of them graduates from college. Based on the Graduation data from the National Center for Education Statistics' Integrated Postsecondary Education System, in 2012 in United States 66.2% of high school graduates were enrolled in colleges or universities, and 42% graduate from college. One of the main reasons for the Italian's low attendance to universities is the high numbers of unemployed college graduates in Italy and the low incentive given by the fact that college graduates make only 7% higher income than non college graduates (Americans with a college education make an average of 20% more than without a college education).

### **Results and proposed improvements for a future global educational system**

“Close to 60 percent of Americans believe that the country's colleges and universities are failing to provide students with “good value for the money they and their families spend,” according to a 2011 survey by the Pew Research Center

Discontent with the quality of education in America, as well as the increasing costs of it, is the main reason behind the explosion of the MOOCs and the desire for a significant overhaul of today's higher education system, in part rendered possible by the technological revolution mentioned at the beginning of this paper. We base our recommendations on the main strengths of the two systems analyzed.

The main strengths of the Italian college education are:

1. The high quality derived from training students to face challenge, struggle through it and overcome problems, no matter how hard is the fight. The Italian education fosters determination, high problem solving skills, resourcefulness in overcoming any struggle.
2. Cost of education is extremely low
3. Strong high school programs that teach general education well across five years, allowing college to focus on the chosen field of expertise (no GE classes in college)
4. Large classes foster sense of independence, self discipline, resilience and perseverance
5. Moderate emphasis is placed on students' evaluations, freeing the faculty from the constraints of having to spell everything out to render the perception of the class' learning

objectives and assignments easy to understand and collect high scores in the clarity component of the students' evaluations. Faculty are free to demand beyond what is taught in order to train students to struggle and solve problems without the risk of lower students' evaluations.

The main strengths of the American college education are:

1. Small classes with direct contact with the faculty member
2. Opportunities for cross-disciplinary education, thanks to the campus setting
3. A relaxed and informal relationship among students and the faculty members, that fosters ability to ask questions and one-on-one attention

The following recommendations are based on the comparison of the Italian and American public educational systems, they must be considered in the light of the need of a reform in higher education, already initiated by the explosion of the MOOCs:

1. We should think globally and think critically in order to set up an educational structure, with no physical boundaries, that could be attended by students from very different parts of the world, thanks to the technological revolution that allows on line/remote learning.
2. First and foremost we must train students to face challenge, fostering self-discipline and determination to struggle intellectually in order to succeed. We must stop feeling that every task in a college curriculum must be "clear and spelled out"; part of the students' learning must be in the unknown and unclear, in thinking outside their comfort zone, in figuring things out, this exploration must be a common practice. Faculty members should demand of the students to perform a notch above what is taught, to go beyond the obvious; such practice fosters critical thinking, problem solving, determination to succeed and ability to endure intellectual struggle. We must praise more the "hard work" that allowed the students to reach learning than the intelligence employed in order to learn.
3. We must add in the students' evaluations the assessment of intellectual struggle, and revise the items pointing at "clear explanation of tasks and responsibilities" (for example: How do you rate agreement between the course objectives and lesson assignments?), since room must be given for exploration, the thinking outside of the comfort zone, the

originality of solutions, all of which must be a constant component of the student's learning experience.

To strengthen our recommendations we quote the review of Amanda Ripley's book "the smartest kids in the world: And how they got that way", from the New York Times: "In an automated, global economy, kids needed to be driven; they need to know how to adapt, since they would be doing it all their lives. They needed a culture of rigor" and "Kids in hamster-wheel countries (Korea) knew what it felt like to grapple with complex ideas and think outside their comfort zone; they understood the value of persistence. They knew what it felt like to fail, work harder and do better. They were prepared for the modern world."

## **Conclusion**

We are fortunate to be in a time of change in higher education, we have the great opportunity to make our country a nation of thinkers and over achievers by adding to our students' learning the ability to endure intellectual struggle, as well as the resilience and perseverance needed to go beyond the stated and discover new solutions and perspectives. We indeed all hope that education will have no geographical boundaries and will be affordable, and that "computers will ultimately be able to tailor an entire "learning environment" to fit each student" (David Kuntz). If all those expectations ultimately fail we need to at least equip our American students with the intellectual thinking capacity needed to truly excel in the real world. American faculty members today are so concerned about receiving high scores on the students' evaluations that they do all that is possible to detail goals and assignments to the point of preventing the students from having to think. This process undermines the essence of a university itself, that, in the words of Prof. Drew Gilpin Faust, the newly installed first lady president of Harvard University: "is not about results in the next quarter. It is about learning that molds a lifetime, learning that transmits the heritage of millennia; learning that shapes the future".

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Adventure Based Counseling and Diversity:

Perceptions of Group Cohesion

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### Abstract

In today's society, race is often seen as a divisive factor. This article discusses adventure based counseling programs and the impact that race has with regards to the group members' perceptions of group cohesion. When examining adventure based counseling programs and group cohesion, research suggests that there were no significant differences in perception of group cohesion by race. The implications for counselors are examined and discussed.

## Adventure Based Counseling and Diversity:

### Perceptions of Group Cohesion

Over the past few decades, there has been an increase in the use of adventure based counseling (ABC) programs (Nassar-McMillan & Cashwell, 1997) as interventions among adolescents with behavioral and social problems (Johnson, 1992) and as a method of building teams (Springett, 1987). ABC is an innovative alternative to traditional group counseling, and uses the elements of adventure and risk to promote growth and change among participants. Because of this increased usage, there is a need for researchers to examine potential uses of challenge course programs and determine possible outcomes of their implementation (Davis, Ray, & Sayles, 1995). In addition, with an increased emphasis on diversity issues within the counseling profession, it is critical that the role and usage of low-element challenge course programs in multicultural counseling be addressed.

Springett (1987) acknowledged that one of the potential benefits for participants in challenge course programs is increased perception of group cohesion. Cohesiveness has been identified as one of the key factors in the development of a group (Griffin & Pennscott, 1991) and an important variable for a variety of groups and different types of group processes (Evans & Jarvis, 1980).

This paper examines the effect of participation in a low-element challenge course on the perceived level of group cohesion among diverse participants. Race was included

as an independent variable in the study to determine if participants belonging to various racial groups perceived group cohesion differently.

#### Low-Element Challenge Courses

Adventure based counseling uses a progression of activities including icebreakers, group initiatives, trust building exercises, low-element challenge courses, ropes courses, service projects, and peak experiences as a way to encourage change (Schoel & Maizell, 2002; Fletcher & Hinkle, 2002). While some elements typically focus on leadership abilities and others focus on communication skills, all activities emphasize group cohesion. The elements in the type of ABC programs used in this study (low-element challenge course) are designed to make few physical demands on the participants, however, they require participants to share responsibility and solve problems as a team.

There are several significant aspects to tasks typically employed in adventure based approaches with low-element challenge courses. The sequence of activities typically progresses from easier exercises through tasks that are more physically and mentally challenging (Alexander & Carlson, 1999). The activities build upon one another and increase in difficulty so that the group is consistently challenged. This requires participants to improve their social and problem-solving skills as well as their ability to work together in order to successfully complete the activities.

#### *Multicultural Counseling and Group Work*

In today's society, it is likely that counselors will be called on to assist in dealing with diversity issues within groups (Johnson, Torres, Coleman & Smith, 1995). As

DeLucia-Waack (1996) stated, “All group work is multicultural” (p. 218). Within any of the groups (e.g., committees, peer groups) to which people belong, members bring their unique cultural identity, which is developed through cultural background, race, gender and socioeconomic status (Conyne, 1998). Therefore, an important task for counselors is to develop the ability to help members learn about themselves and each other, which requires attention to multicultural factors (McRae & Johnson, 1991).

Participants in these programs work toward the same goals and must communicate effectively and recognize the diversity represented among group members as a form of enrichment rather than as a deficit (Manning & Lucking, 1993). Each member is viewed as an important component of the group and members experience success or disappointment as a whole rather than as individuals. This focuses on each member’s strengths and incorporates those characteristics into the group.

Manning and Lucking (1993) positive human interaction among individuals of various races or cultures tends to facilitate feelings of harmony among involved members. The low-element challenge course program attempts to facilitate this type of experience for each member of the group.

### *ABC and Group Cohesion*

The results of one study (Glass & Benshoff, 2002) suggested that an increased perception of group cohesion by participants could be achieved through participation in a one-day low-element challenge course program. In addition, similar results were experienced with a group of college students (Glass, 2002). While these studies revealed

that participation in ABC programming could cause an increase in participants' perceptions of group cohesion, they also revealed interesting issues related to perceptions of group cohesion and race.

These studies revealed that various races (White, African-American, and Hispanic) perceived group cohesion in a similar manner after participation in the one-day program. This suggests that ABC programs may facilitate cohesion among diverse participants with group members, regardless of cultural differences, experiencing similar perceived levels of cohesion. This information is exciting for counselors seeking to build strong relationships through group work. In order to offer the most culturally sensitive approaches, it is critical for the counseling profession to research and identify counseling programs that may aid in the lessening of racial effects without diminishing the importance, or ignoring the relevance, of each person's background.

These results suggest low-element challenge course programs can be a valid method for helping diverse groups to experience higher levels of perceived group cohesion, while perhaps minimizing the effects of race. The implications for group work are powerful, in that all counseling groups may benefit from higher perceptions of group cohesion. Feeling connected to the other group members helps to facilitate self-disclosure which, in turn, helps to facilitate personal growth, the basic premise of counseling. It is possible that regardless of the reasons for a group's origination, the use of a low-element challenge course program could help group leaders facilitate the cohesion needed to move the group along in its development to deeper stages of interaction.

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**Session Title:**

*If I knew then what I know now: Bridging the gap between credential and the first day of school*

**Topic areas:**

Special Education/Teacher Preparation

**Presentation Format:**

Paper Session

**Session Description:**

The disconnect between teacher education programs and new teachers' feelings of preparation and confidence is well documented. We will share one university's efforts to bridge the gap between preparation and classroom through a summer workshop. Special education teachers who just completed their credential program but had not yet begun their first job worked with teachers and a professional development expert to plan for the specific needs of their students before the first day of school.

**Presenter:**

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New special education teachers have reported a disconnect between their teacher preparation program and the actual skills they needed on the first day of school. Research tells us that there is a persistent gap between academic curriculum in teacher preparation programs and the actual skills new teachers report they need. This gap contributes to a significant problem with teacher retention in special education (Billingsley, 2004). There is consistent data across years that attrition in special education is higher than general

education, and highest in the first five years of teaching (Boe, Sunderland, & Cook, 2008). Teachers cite lack of preparedness for professional tasks as reasons for leaving the profession (Billingsley, 2004; Sack, 1999). Specifically, new special education teachers felt they needed additional preparation in areas including: classroom management and behavior support; adaptation of curriculum, materials, and instructional strategies; knowledge of legal regulations and Individual Education Plans (IEP); and collaboration with other teachers and paraeducators (Kamens, Loprete, & Slostad, 2000).

These findings were replicated in a large university through review of exit data, surveys, and interviews with teachers who had either completed a mild/moderate, special education credential program and were teaching in their own classroom, or were currently in the program and working in a student teaching field placement. These teachers reported feeling well prepared as they finished coursework, but that once in the classroom, they felt they had been under-prepared to effectively cope with behavior management, collecting and using formative data for instructional design, collaboration, and establishing and maintaining effective systems for managing special education caseloads.

What causes this disconnect? Universities have been pushed by local and federal regulations to shorten programs and move teachers into the classroom at a quicker pace. Simultaneously, budget demands on school districts have forced the development of special education classes that serve students with a wide, and sometimes disparate, range of needs. As a result, special education credential programs are using fewer courses to prepare teachers to work in schools with a broader range of responsibilities than ever before. Beginning special education teachers are expected to meet the varied needs of

students with disabilities with mild to moderate learning differences (including diploma-track to non-academic, functional skills), across multiple grade levels, and across a wide range of placements and service delivery models (Nougaret, Scruggs, & Mastropieri, 2005).

Given the recent recession across the country, teachers completing preparation programs never know where they are going to end up and their fieldwork is often a mismatch with their actual first teaching position. As the recession continues and school districts are forced to serve children with shrinking funds, more children have been folded into one-size-fits all programs. Despite the best efforts of programs to provide a broad array of experiences and curriculum, teacher education programs are faced with the dilemma: how can we sufficiently prepare candidates to meet an incredibly diverse range of demands on the first day of class?

With support from a 325 T grant and using multiple data collection methods (focus groups, advisement groups, observations, student surveys, and faculty feedback groups) one large urban university identified several key areas in which students felt they needed more support, and set out to address them. Two weeks before the beginning of the K-12 school year, we offered a 2-day summer workshop that provided new teachers the opportunity to receive supplemental support in planning formative assessment, creating instructional groups, preparing behavior management systems, and designing instructional strategies before they began teaching. Twenty-two newly hired or interviewing special education teachers attended the workshop and worked directly with exemplary candidates from one year earlier who had just completed their first year as a classroom teacher, veteran educators, university faculty, and a professional development

expert, to plan for the specific needs of their students in preparation for their own first day of school.

The workshop consisted of several different session types, and was led by a variety of support providers. Session formats included: whole-group, hands-on, interactive activities; a “Rap Session” panel of novice teachers sharing advice after their first year as a teacher; small-group “Station” sessions with experienced, mentor teachers on specific topics of need; and a whole-group, full-day professional development provided by an expert in the field. All sessions were videotaped and participants were invited to share through interview which parts of the workshop they found most valuable. Evaluation data was collected.

### **Paper Session**

This session will share an analysis of findings from the two-day workshop, including which session types, levels of presenters, and specific content, were most valued by the teacher candidates who attended the workshop. Participants will have an opportunity to discuss the findings of this project and learn about what the teacher candidates and new teachers identified in the first place as the gaps in their credential program, how those needs were supported through the workshop, and hear about whether or not the workshop met its goal. Session participants will view video clips of actual workshop sessions and hear, through videotaped interviews, directly from the new teachers. Participants will discuss what supports might be offered in their programs to help bridge the gap between credential and practice, and more fully prepare beginning teachers for the first day of school. Research questions include the following:

1. What skills are needed by new special education teachers to feel prepared to teach the wide diversity of students who might be assigned to their caseload?
2. What types of supports make a difference to new teachers, and are they sustainable?
3. With these supports, can new teachers begin the school year ready to meet the individualized needs of their students?

### **Learner Outcomes**

Participants will be able to:

1. Identify gaps between teacher preparation programs and demands in the field;
2. Discuss activities that have been shown to increase new teacher confidence for the first day of school;
3. Identify methods of sustainable support to bridge the gaps;
4. Share strategies for preparing teachers that are ready for the first day of school.

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# LEARNING NEEDS IN THE MULTICULTURAL CLASSROOM: IMPLICATIONS TO EQUITABLE TEACHING

## ABSTRACT

### ON MULTICULTURAL EDUCATION

(may also fall under the areas of *Curriculum* and *Teacher Education*)

for **Paper Session** in the 12<sup>th</sup> Annual Conference of

### HAWAII INTERNATIONAL CONFERENCE ON EDUCATION

In Honolulu, Hawaii on January 5-8, 2014

This paper will present the learning needs of international students in the multicultural classroom. Data for this study were taken from focus group interviews of six ethnic groups (*Asian, Black, Filipino, Filipino-American, Hispanic, and White*) of the student population of Adventist University of the Philippines. The themes that emerged from transcripts showed that multicultural classrooms call for *culturally responsive teaching, teacher immediacy behaviors, differentiated instruction, instructional clarity, and teacher language competence.*



by

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# LEARNING NEEDS IN THE MULTICULTURAL CLASSROOM: IMPLICATIONS TO EQUITABLE TEACHING

## Abstract

*(Full paper will follow, if requested/accepted)*

This qualitative study identified the learning needs of students in the multicultural classroom. The study utilized a semi-structured interview guide and data were gathered through focus group interviews of six ethnic groups, namely: *Asian, Black, Filipino, Filipino-American, Hispanic, and White*. Each group was comprised of eight to twelve members purposively sampled from the student population of Adventist University of the Philippines (AUP) for the collegiate year 2012-2013. The themes that emerged from the *Qualitative Data Analysis* of interview transcripts showed that learning needs in the multicultural classroom are *culturally responsive teaching, teacher immediacy behaviors, differentiated instruction, instructional clarity, and teacher language competence*. Each need was inductively extracted from recurring themes and concepts evident from the interview transcripts. Thus, each was extensively supported by relevant interview excerpts and related studies. Students from various cultural, political, geographical, and language backgrounds voiced out the common inequality problems they encounter in a classroom. The study confirmed the importance of teacher language competence, particularly in the use of English as medium of instruction, considering context of AUP where students come from over 50 countries and the teaching force is dominantly comprised of Filipino teachers. They were one in affirming that teachers need to be sensitive to and respectful of cultural differences, warm in accommodating students' needs, creative and constructivist in terms of employing varied teaching strategies, competent and eloquent in communicating classroom instructions (spoken and written) and content. The teacher's communicative competence was deemed to play a significant role towards mutual respect and equitable teaching. It is thus recommended that teachers rethink their approaches so that students from diverse cultural and language backgrounds will have equal learning opportunities. Further, it is deemed imperative to look into the curriculum and instruction to bring about changes in the way educational programs are conceptualized, organized, and taught.

Keywords: *learning needs, multicultural classroom, equitable teaching, culturally responsive teaching*

**Note to the Organizer:** Please retain the *italic* format of the *italicized words*.

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## *Abstract*

### *An innovation into primary teacher education program in Bangladesh*

This paper portrays an assumed change in the primary teacher education program in Bangladesh. An initiative has been taken with a vision to ensure an integrated approach to developing teachers' knowledge and understanding about learning at a deeper level, and with that aim the Diploma in Primary Education (DPED) program replaces the Certificate-in-Education (C-in-Ed) program in Bangladeshi context for primary teachers. The stated professional values of the existing program such as 'learner-centered', 'reflective' approach to pedagogy tend to contradict the practice exemplified through the delivery mechanism. To address the challenges, through the main two components (i) Training Institute-based learning and (ii) School-based learning, the new program tend to cover knowledge and value that underpin the actual practice of teaching. These two components are given approximately equal weighting within the program in terms of both time, content and assessment as the integration seeks to combine theoretical knowledge with practical knowledge and vice versa. The curriculum emphasizes a balance between the taught modules and the components of the practicum. For example, the theories of formative and summative assessment techniques are elaborated through focused reflection on case studies as well as observation and teaching practice in the classroom. The key ideology that is reflected through this newly developed program is teacher's belief in 'holistic education' that can lead to creating opportunities for skills development in all three (*Cognitive, Social and Affective*) domains simultaneously. The proposed teacher education program aims to address these areas of generic skill development alongside subject-specific learning outcomes. Although the new program addresses the above mentioned factors, one of the challenges of the proposed program is the issue of equity regarding teachers' background qualifications and experiences. Careful consideration needs to be given to the recommendations suggested for effective implementation.

The Effects of Web-Based Learning on EFL Learners' Refusal Speech Act  
Performance and Learning Motivation

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**Abstract**

The purpose of the current study was to investigate the effect of web-based learning on EFL university students' production of refusal speech act sets and motivation.

Sixty-six freshmen from two classes in a university of science and technology in central Taiwan were assigned into an experimental group or a control group. The experimental group received the web-based learning instruction for 3 weeks while the control group received regular instruction. The questionnaire of discourse completion test (DCT) and mini-attitude/motivation test battery (mini-AMTB) were applied in order to collect the data. After the instruction, the results demonstrated that the experimental group outperformed the control group and revealed a significant progress on the posttests of refusal strategy use. Further, the experimental group had positive motivation toward learning refusals.

In conclusion, web-based learning had a positive effect on refusal strategy learning and motivation. Finally, pedagogical implications and suggestions were offered for learners and teachers.

**Keywords:** web-based learning, speech act, refusal, motivation

# **“Dynamic and Ecological Factors of Bullying: A Qualitative Methodology”**

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## **Introduction**

The incidence of bullying, in its various forms, in public schools continues to be not only a problem for local school districts but also at the national level. A review of the research literature yields 74 peer-reviewed publications 54 in journals, 11 books and 9 reports in the period between 1992-2011. A review of the research literature yields multiple definitions. To be sure, each state, local school district endorses its own specific definition of bullying in the context of schools. Olweus has brought the issue of bullying to the forefront through his seminal works. He proffers that “Every individual should have the right to be spared oppression and repeated intentional humiliation, in school as in society at large” (1993,) p.427). As a result Olweus (1993) states, “A person is being bullied or victimized when he or she is exposed, repeatedly and overtime, to negative actions on the part of one or more persons (Olweus, 1993. P.413). His definition has been accepted and supplemented by many researchers. (Bernstein & Watson, 1997; Cantu & Heumann, 2000). A more recent variation has been suggested by Nansel, Overpeck, Pilla, Ruan, Simons-Morton, and Scheidt (2001) as a: “specific type of aggression in which (1) the behavior is intended to harm or disturb, (2) the behavior occurs repeatedly over time, and (3) there is an imbalance of power, with a more powerful person or group attacking a less powerful one” (Nansel et al., 2001, p. 2085). Funneling the definition to specific targets Hoover & Stenhjem (2003) suggests, “bullying consists of a series of repeated, intentional, cruel incidents between the same children who are in the same bully and victim roles” (p.2).

## **Review of Literature**

A study by Shafer, Korn, Smith, Hunter, Mora-Merchan, Singer, & Van der Meulen (2004), investigated the stability of victimization from primary to secondary school, found that those students who were continuously bullied had lower self-esteem than the control group or those only bullied in primary or secondary school. This demonstrates that experiencing bullying for several years reasonably

introduces the possibility that this long duration could result in harmful effects. Hoover & Oliver (1996) reported that both males and females students who were bullied perceived the reason as not “fitting in” This was true of both genders at 4-8<sup>th</sup> grades and 8-12 grades. The second most common reason for being bullied was reported to be a result of their friendships. Further, victims reported being anxious, insecure and having reported self-esteem. Putting these findings in the context of the inclusion movement to educate students with disabilities in the general education class creates another layer of potential bullying. In fact the very reasons given by the victims of bullying-not fitting in and association with friends parallels the notion of students in special education and their respective peers. In fact, Roberts & Smith (1999) found that children generally have a negative attitude towards their peers with disabilities.

The research related to disabilities and bullying is emerging. Kaukianinen, Salmivalli, Lagerspetz, Tamminen, Make, & Poskiparta (2002) ; Torrence (1997), Whitney, Nabuzoka & Smith 1992 have reported Prevalence). Bowman (2001) suggested that students with disabilities have a greater likelihood of being victimized by bullying. Regardless of disability Bullying has been reported at a higher rate than with nondisabled students. Intellectual disabilities (Reiter& Lapidot-Lefler 2007;McGrath, Jones, & Hastings 2010); Emotional and behavior disorders (Frances & Potter 2010,); Aspergers’s Syndrome (Biggs, Simpson & Gauss (2010). Whitney (1994) suggested that bullying was related to disabilities and that bullying occurs regardless of disability (Mishap 2003, Yule, Goodman and McConachie 1998; Martlew, & Hodson 1991; Dixon 2006; Biggs, Simpson & Gaus 2010). Sweeting & West (2001) suggested that less attractive, overweight, disabled and poor school performers were more likely to be bullied. Those students with visible disabilities have been targeted (Dawkins, 1996) as well as students with attention deficit disorders (Unnever & Cornell, 2004). Marini, Fairbairn & Zuber 2001) reported that “children with disabilities are at least twice as likely to be bullied than their nondisabled peers” (p.175). Gil & Costa (2010) similarly stated that children with disabilities more likely to encounter violence and victimization- further suggesting that inclusion might exacerbate this bullying. Luciano & Savage

(2007) found that students with learning disabilities self-reported significantly more incidents of being bullied than their non-disabled peers. Taylor (2012) suggested that all students are susceptible to bullying but that student with disabilities are more susceptible due to “characteristic that place them on either side of the bullying issue, be it as a bully or victim of bullying” (p. 1). Estell, Farmer, Irvin, Crowther, Akos, Boudah (2009) found that teachers rated students with moderate disabilities as bullied significantly more than peers. Martlew and Hodson (1991) corroborated this study by reporting that students with learning disabilities had fewer friends and were teased significantly more than non-learning disabled peers.

A comparative analysis of bullying among students in special education and general education was conducted by Rose, Espelage & Monda-Amaya (2009). They found that students in special education classes reported greater incidences of bullying than reported by students in general education classes. Specifically students receiving education in self-contained classes reported more incidences of bullying than those students in inclusive classes. In general it was reported that over 18% of students with disabilities in inclusive classes reported being bullied. This same number also reported assuming the role of bully. The theme of “fitting in” and core of friends that student associated with seems to merge again as a factor in targeted bullying. Additionally Egan & Perry (1998) suggested that their peers do typically not accept students that are bullied. Others have suggested that bullied students tend to lack friends in school (Olweus 1994). Conversely, students with disabilities have also been identified as bullying others. Whitney (1993) found that students with learning disabilities were as likely to bully as being bullied. Olweus (2001) reported that anywhere between 10%-20% of those that are bullied are bullies themselves.

## **Methodology**

This was a qualitative study of bullying of students with special needs in select public schools. Eight, 4<sup>th</sup> grade students, two female and 6 male, ranging in age from 9 years old to 10 years old were observed on the playground, cafeteria,

resource room, general education classroom during transitions and during specials. Observations were conducted in a variety of settings where students with disabilities would interact with typical peers.

## **Results**

This qualitative inquiry employed a constant comparative method utilizing and open and co-axial coding of the qualitative data- specifically the descriptive field notes, verbatim scripts and observer journals. Several common themes emerged through the analyses. Observations of the student with disabilities that experienced bullying. These prominent themes were ritual bullying; attention seeking; isolation; verbal antecedents, superiority and retaliation.

## **Implications for schools**

With all efforts there needs to be a collaborative partnership with parents to make school resources available and provide for communication. It is imperative that generalized bullying behavior from school to home is corrected and management consistently for maximum effectiveness for correction. Additionally, university professional teacher education program ,for both general and special education, should include knowledge and skills in identifying bullying and it long-term effects. Effective behavior management strategies to address bullying could be incorporated into classes.

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## Proceedings Submission

### Abstract-- 2014 Hawaii International Conference on Education

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6. Abstract

## **Abstract**

Nowadays, the study of teachers' professional identity as an important research field in teachers' professional development draws much attention. Researchers (Beijjaad et al., 2004; Miller, 2011; Tsui, 2007) agreed that teachers' professional identity is variable, flexible and shifting, and the construction of professional identity is related with teachers' personal background, institutional culture and environment. But to the questions like "how do teachers in the same institution construct their professional identity?" or "whether the processes or trajectories of teachers' professional identity construction are similar?", there are not clear answers (Liu, 2011).

The research objectives of the present study are to explore three aspects concerning teacher professional identity construction and to answer three questions: 1. How do university EFL teachers in China understand their professional identity? 2. How do university EFL teachers in China construct their professional identity in community of practice? 3. How do the teachers differ in the process of shaping and constructing their professional identity? The university EFL teachers who participate in the present study are from a key comprehensive university in Chongqing, China. They are divided into three groups and categorized as novice teachers, developing teachers and experienced teachers. The theoretical base adopted in this study is Wenger's Theory of Community of Practice. A qualitative research methodology is used in the study. The data are collected mainly by interviews and observations. In addition, narrative inquiry is used to analyze the stories of the participated teachers. By using coding framework and thematic analysis, some key words and key incidents have been elicited to help us to understand how the teachers construct their professional identity, what trajectory of constructing professional identity as a university EFL teacher is in the institutional community, and to understand the similarities and differences in the process of the teachers' shaping their professional identity. According to the investigation, the results indicate that academic identity, teacher identity and institutional identity compose the university EFL teachers' professional identity. Institutional community where teachers work together and teaching community involving the interaction between teachers and students are of great significance in the construction of EFL teachers' professional identities. Furthermore, the results indicate that collaborative and caring institutional community helps to enhance novice teachers' sense of belonging and awareness of development, and the emotional motivation and resources support from the institution, colleagues and institution leaders' positive feedback help the teachers a lot in developing an integrated professional identity. The results also suggest that teachers participating in this study have shown strongest awareness of teacher identity, followed by academic identity, while institutional identity is rather implicit. Meanwhile, some problems are revealed in the present research. For instance, novice teachers report that they feel helpless in construction of their academic identity; the assessment system is both motivation and pressure; insufficient cooperation in teaching and academic research between teachers; and the peripheral teachers' need of chances of being involved in

the community of practice. Finally, some suggestions are given as follows: developing teachers' learning community which can play an important role in guiding and leading younger teachers in academic research; empowering teachers in decision making to raise their obligations and responsibilities for developing themselves with the whole group; teacher education should be human-oriented, focusing on the teachers' pressure and confusion in their development; teachers should reflect the context such as change of policies and institutional development as well as themselves, so they can know themselves better and make future plans for their professional development.

This study draws attention to the complexity and differences in the process of teachers' professional identity construction. It implies that it is crucial to create a supporting atmosphere for constructing teacher professional identity. It sheds some light on Chinese university EFL teachers' rethinking of their duties, rights, and professional identities, and of their professional development.

**Keywords:** university EFL teachers in China; professional identity; community of practice; narrative inquiry

**Title:** Using Item Response Theory (IRT) to Examine the Student Rating of Teachers (SRT) Scale for Saudi Arabia

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**Abstract:** Teacher evaluations are common in the United States, but are not in Saudi Arabia. The purpose of this study was to examine the Students Rating of Teachers (SRT) scale using Item Response Theory (IRT) and Differential Item Functioning (DIF) analysis in high school students ( $N = 1,503$ ) in Saudi Arabia. Refinement of the measure is needed; however, the results support the SRT's eventual use as a way to evaluate high school teachers in Saudi Arabia.

## **Using Item Response Theory to Examine the Student Rating of Teachers Scale for Saudi Arabia**

### **Objectives/Purposes:**

The purpose of this study was to examine the psychometric properties of the newly developed Students Rating of Teachers (SRT) scale using Item Response Theory's (IRT) Graded Response Model (GRM; Samejima 1969; 1972) and Differential Item Functioning (DIF) analysis in a sample of high school students ( $N = 1,503$ ) in Saudi Arabia. This study provides a description of teacher evaluations and how they have been used in Saudi Arabia. It will also provide an idea of the most efficient way to evaluate teacher performance using quantitative responses to the newly developed measure. The main research questions addressed the following: (1) What are the psychometric properties of the SRT?, and (2) Are there differences in how the items function based on if a student is evaluating a Religion/Language Arts class or a Math/Science class?

Teacher evaluations are a means by which many decisions can be made on behalf of the instructor with regards to teaching style and course content, or from an administrative position of instructor promotion and tenure and course allocation decisions (Alqarni, 2007). One widely-used method is the evaluation of teachers by students through mid-semester evaluations, final course evaluations, or at other time points during the academic year (Aleamoni, 1999). These evaluations are commonplace in the United States, but have not been used consistently in other countries, specifically Saudi Arabia. With regards to the professional impact that teacher evaluations can have, it is no surprise that the development and psychometric properties of these measures are important. Thus, it is imperative to examine the construction and psychometric properties of teacher evaluations, which can be considered "high stakes" depending on how they are used.

### **Perspectives/Theoretical Framework:**

Student evaluations are a natural method of soliciting feedback about teacher performance in that students have the most contact with teachers (Follman, 1992). Popular methods include surveys with Likert rating scales and some including a few open-ended questions near the end of the survey. However, student ratings of teachers are sometimes not considered a good source of information due to a number of potential biases. In the literature, a number of issues related to student evaluations have been investigated (Aleamoni, 1999). One common misconception included measurement-related problems such as poor reliability and validity evidence to support the use of student rating forms. The author reported inconsistent findings for these measurement issues.

Chapman and Kelly (1981) indicated that an enormous amount of research has investigated high school and college students' evaluations of effective teaching behavior. The authors point out that most of these studies, however, have been conducted in Western countries, primarily the United States and Canada. Very little research has investigated these relationships in rapidly developing non-Western countries where there is often the greatest demand both for increased teacher training and the means for evaluating the performance of teachers. With the

burgeoning international exchange of instructional materials and personnel, there is a growing need to understand the variables that describe effective teaching across cultures and the best ways to measure these variables.

Additionally, it has been identified that instructors teaching in certain disciplines receive higher ratings than their colleagues teaching in other disciplines (Cashin & Downey, 1992; Feldman, 1978). The highest ratings were in the arts and humanities, followed by the biological and social sciences. The lowest ratings were in business, computer science, math, engineering, and the physical sciences. Thus, it is necessary to examine this phenomenon in the current study, where the purpose is to create a flexible teaching evaluation to be used in multiple subject areas.

### **Methods:**

A measure was developed entitled the Students Rating of Teachers (SRT) scale in 2007. The SRT was developed by investigating literature and multiple resources describing the factors that are influential in how a student rates his/her teachers (Omotani & Manatt, 1993). Data collection involved visiting all of the schools within the Bisha School District and asking principals to allow students to be surveyed. The SRT was administered at volunteering schools, which included male high school students in the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> grades in December of 2007. The SRT was administered in paper-and-pencil form by the same researcher during a time when the teacher was not in the classroom. Classes included subjects in mathematics, English, science (e.g., chemistry, biology), computer science, religion, and Arabic.

The sample consisted of 1,503 male high school students (i.e., 28% of the total students in the Bisha School District), ranging in age from 16 to 18 years. The participants were obtained from eight public high schools (i.e., 29% of high schools) and 58 different classes. The students assessed teachers in six different subjects (i.e., mathematics [ $n = 215$ ], Arabic [ $n = 254$ ], English [ $n = 276$ ], religion [ $n = 245$ ], science [ $n = 270$ ], and computer science [ $n = 243$ ]). The participants were drawn from both rural and urban secondary schools in three different grades (i.e., 1<sup>st</sup> [ $n = 581$ ], 2<sup>nd</sup> [ $n = 472$ ], and 3<sup>rd</sup> [ $n = 450$ ] grade, which is equivalent to the 9<sup>th</sup>, 10<sup>th</sup>, and 11<sup>th</sup> grade in the United States). Therefore, the intent is for the results to be generalized to male, public high school students across Saudi Arabia.

### **Data Sources/Evidence:**

Alqarni (2007) developed the Student Rating of Teachers (SRT) scale, which is a measure of students' ratings of teachers (e.g., end-of-course evaluation). The measure contains 25 items, which were reviewed by 14 individuals in education (i.e., principals, supervisors, and teachers in all different subjects) and three psychometricians. These items measure teaching behaviors in secondary school, which were derived from the characteristics of good quality teaching in the teacher evaluation literature (e.g., Omotani & Manatt, 1993). The items were constructed and developed according to Classical Test Theory principles (Allen & Yen, 1979; Crocker & Algina, 2008). The SRT is on a 5-point Likert scale (i.e., Excellent = 5, Very Good = 4, Good = 3, Acceptable = 2, Weak = 1). All the items were worded in the direction of the construct (i.e., no reversely worded items). The highest possible score is a 125 (i.e., students' highly evaluating their teacher), and the lowest is a 25 (see Appendix A).

The main statistical analyses implemented included Differential Item Functioning (DIF) and Item Response Theory (i.e., the Graded Response Model [GRM]) in IRTPro 2.1. DIF is a condition when an item functions differently from one group to another. DIF analysis will be used to identify SRT items that function differently across groups of subjects by course evaluated (i.e., Religion/Language Arts [ $n = 775$ ] and Math/Science [ $n = 728$ ]). After DIF, due to the polytomous response structure of the items, Samejima's Graded Response Model (GRM) was used (Samejima 1969; 1972) to examine the psychometric properties of the scale.

### Results/Conclusions:

*DIF.* Prior to DIF analysis, descriptive information for all the items was examined (Table 1). It has been noted that instructors teaching humanities, fine arts, and languages tend to receive somewhat higher ratings compared to instructors teaching mathematics or chemistry (Feldman, 1978). Therefore, it is assumed that SRT items might behave differently across these groups (i.e., Language Arts/Religion and Math/Science). DIF analysis was implemented to investigate the equivalence of item functioning for the classes (i.e., mathematics, English, science, computer science, religion, and Arabic). As mentioned previously, these six classes were grouped into two groups – Religion/Language Arts (i.e., English, religion, and Arabic) and Math/Science (i.e., science, computer science, and mathematics).

Table 2 presents the parameters for each item separately for the Math/Science group and the Religion/Language Arts group. For the overall  $\chi^2$ , five items were found to have significant DIF ( $p < .05$ ). Further scrutiny revealed that these items (i.e., 8, 11, 14, 18, and 19) had significant DIF in the difficulty parameters with the Math/Science group endorsing lower levels of the construct (e.g., “Weak” or “Acceptable”) compared to the Religion/Language Arts group. It was also noted that item 18 also had significant DIF in the discrimination parameter. Overall, 20% of the items showed significant DIF. Several studies show that item-level bias does not necessarily weaken measurement quality of the overall test (Roznowski & Reith, 1999; Waller, Thompson, & Wenk, 2000), and item bias does not necessarily lead to differential test functioning (Waller et al., 2000). Therefore, the remaining analyses were therefore conducted using the combined sample for the two subject groups.

*GRM.* Prior to analysis, the assumptions of Local Independence and Unidimensionality were examined and were satisfied. The GRM showed satisfactory fit ( $M^2(200) = 172.70$ ,  $p = .919$ ; RMSEA  $< .01$ ), with no indication of Local Dependence among the 25 items. The results showed that the parameter estimates for the slopes ( $a$ ) ranged from 1.11 (Item 2) to 3.30 (Item 9). The lowest  $a$  value (Item 2) indicates that the curve is flatter compared to the highest  $a$  value (Item 9) where the curve is steeper (see Table 3). According to de Ayala (2009), discrimination values between approximately .8 and 2.5 are considered ideal.

In addition to the  $a$  parameters, the threshold parameter ( $b$ ) was examined. In the GRM, for the SRT with five response categories, there are four thresholds (i.e.,  $b_1$ ,  $b_2$ ,  $b_3$ , and  $b_4$ ). The  $b$  parameter estimates have a range of -4.45 (Item 2) to -1.33 (Item 20) for  $b_1$ , -3.80 (Item 2) to -.98 (Item 20) for  $b_2$ , -3.01 (Item 2) to -.43 (Item 16) for  $b_3$ , and -1.78 (Item 2) to .26 (Item 16) for  $b_4$ . Item 2 had the lowest parameter for all  $b_j$ . Therefore, this item is the easiest to endorse. In contrast, Items 16 and 20 have the highest  $b$  parameters. Therefore, these items are the most

difficult to endorse. Overall, there were very few positive  $b$  values, so this scale would be designed to discriminate among respondents with lower levels of  $\theta$ .

The maximum information values for all of the items were associated with  $\theta$  values of  $-.8$  and  $-1.2$  or less. The Total Test Information function is high in the area below the mean between approximately  $-1.2$  and  $-.8$ . The maximum information value for the entire test is  $51.73$  and  $51.14$  ( $\theta = -1.2$  and  $-.8$ ), which means that information from the test is centered below the mean (Figure 1). Therefore, this test is not able to discriminate between different levels of the construct along the continuum.

### **Educational/Scientific Importance of Study:**

The results have implications not only for the evaluation of high school teachers in Saudi Arabia, but also for administrators and school districts looking for quick and efficient ways to gauge general teacher performance, diagnose weaknesses, and provide feedback to the teachers from the perspective of the students. The main purposes of the study addressed the following questions: (1) What are the psychometric properties of the SRT?, and (2) Are there differences in how the items function based on if a student is evaluating a Religion/Language Arts class or a Math/Science class? The analyses revealed that, although there is a need to improve some items to discriminate among respondents with higher levels of  $\theta$ , overall, the psychometric properties of the SRT scale are acceptable.

In Alqarni (2007), many studies were cited that indicate that teachers' evaluations in Saudi Arabia are not providing teachers with practical feedback to improve their performances. Additionally, Alghamdi (1999) indicated that teachers' scores through the official evaluation procedures and evaluations by superiors (i.e., administrators via supervision) have been inflated. Therefore, the SRT scale should provide teachers with timely and practical feedback supported by the psychometric properties examined in this study.

Although refinement of the measure (e.g., eliminating poorly discriminating items, conducting a factor analysis, repeating this study with female high school students and teachers, validation through various mechanisms such as corroborating student evaluations with administrator, peer, or outsider reports, etc.) will be implemented in future research, the results from this study support the SRT's eventual use as a way to evaluate high school teachers in general in Saudi Arabia. With this measure, some areas of weakness can be identified, and can highlight where teachers may need remediation and further training with regards to a specific course they are teaching.

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**Tables**

Table 1

*Descriptive Statistics for the Students Rating of Teachers (SRT) Scale Items*

Item	Language Arts/Religion ( <i>n</i> = 775)		Math/Science ( <i>n</i> = 728)		Total Sample ( <i>N</i> = 1,503)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
1	4.63	.76	4.45	.90	4.54	.83
2	4.79	.58	4.71	.76	4.75	.67
3	4.70	.74	4.49	.96	4.60	.86
4	4.18	1.18	3.55	1.40	3.87	1.33
5	4.20	1.11	3.81	1.29	4.01	1.21
6	4.13	1.20	3.59	1.39	3.87	1.32
7	4.44	.99	4.11	1.23	4.28	1.12
8	4.39	1.02	3.99	1.28	4.20	1.17
9	4.33	1.03	3.88	1.27	4.11	1.17
10	4.00	1.28	3.41	1.50	3.72	1.42
11	4.28	1.09	3.60	1.42	3.95	1.30
12	4.21	1.19	3.74	1.37	3.98	1.30
13	4.51	.91	4.13	1.25	4.32	1.11
14	4.39	1.02	4.00	1.31	4.20	1.18
15	4.31	1.05	3.94	1.25	4.13	1.16
16	3.99	1.25	3.51	1.37	3.76	1.33
17	4.26	1.15	3.66	1.44	3.97	1.33
18	4.10	1.34	3.77	1.46	3.94	1.41
19	4.05	1.38	3.68	1.57	3.87	1.49
20	4.16	1.27	3.63	1.49	3.90	1.41
21	4.35	1.18	4.03	1.39	4.20	1.30
22	4.52	.96	4.21	1.21	4.37	1.10
23	4.53	.92	4.02	1.27	4.28	1.13
24	4.06	1.27	3.59	1.36	3.83	1.33
25	4.25	1.18	3.79	1.40	4.03	1.31

*Note.* For all items and all groups, the range was 1 to 5.

Table 2

*Item Parameters for Language Arts/Religion (LAR; n = 775) and Math/Science (MS; n = 728) Courses of the Students Rating of Teachers (SRT) Scale*

Item	Course	$a$	$b_1$	$b_2$	$b_3$	$b_4$	Total DIF		$a$ DIF		$b$ DIF	
							$\chi^2$	$p$	$\chi^2$	$p$	$\chi^2$	$p$
1	LAR	2.24	-2.36	-2.04	-1.14	-.35	4.9	.433	1.5	.224	3.4	.497
	MS	1.96	-2.82	-2.32	-1.38	-.47						
2	LAR	1.13	-4.50	-3.75	-2.81	-1.34	10.1	.072	0.3	.584	9.8	.043*
	MS	1.03	-4.36	-3.71	-2.94	-1.80						
3	LAR	2.31	-2.32	-1.85	-1.26	-.58	2.7	.741	1.1	.306	1.7	.794
	MS	2.05	-2.49	-2.04	-1.41	-.71						
4	LAR	2.86	-1.29	-.96	-.38	.33	5.3	.382	0.1	.793	5.2	.266
	MS	2.79	-1.28	-.85	-.26	.46						
5	LAR	2.24	-1.63	-1.18	-.50	.37	2.8	.728	1.7	.192	1.1	.892
	MS	2.53	-1.58	-1.15	-.52	.26						
6	LAR	2.78	-1.36	-.85	-.32	.38	5.3	.381	3.0	.081	2.3	.687
	MS	3.26	-1.25	-.85	-.30	.39						
7	LAR	2.72	-1.62	-1.31	-.79	-.01	9.9	.077	1.0	.322	9.0	.062
	MS	3.00	-1.69	-1.26	-.78	-.17						
8	LAR	2.89	-1.65	-1.18	-.73	.09	13.3	.020*	0.3	.585	13.0	.011*
	MS	2.74	-1.71	-1.13	-.65	-.05						
9	LAR	2.95	-1.64	-1.16	-.58	.21	2.2	.819	0.7	.420	1.6	.816
	MS	3.18	-1.61	-1.08	-.56	.16						
10	LAR	1.98	-1.40	-.86	-.28	.51	7.6	.176	1.3	.255	6.3	.174
	MS	2.20	-1.10	-.76	-.21	.52						
11	LAR	2.54	-1.64	-1.08	-.55	.18	15.5	.008*	1.2	.269	14.3	.006*
	MS	2.82	-1.29	-.84	-.29	.34						
12	LAR	2.06	-1.50	-1.10	-.49	.19	9.5	.091	4.6	.032*	4.9	.301
	MS	1.66	-1.76	-1.11	-.49	.26						
13	LAR	1.64	-2.50	-1.86	-1.13	-.25	7.8	.168	0.2	.663	7.6	.107
	MS	1.56	-2.10	-1.64	-1.03	-.25						
14	LAR	2.50	-1.65	-1.27	-.69	.07	12.4	.029*	0.1	.762	12.4	.015*
	MS	2.42	-1.68	-1.22	-.67	-.11						
15	LAR	2.45	-1.76	-1.21	-.61	.18	2.9	.723	0.8	.368	2.0	.728
	MS	2.67	-1.79	-1.17	-.63	.09						
16	LAR	2.42	-1.30	-.83	-.17	.56	0.8	.975	0.3	.598	0.5	.969
	MS	2.31	-1.40	-.90	-.19	.55						
17	LAR	2.30	-1.51	-1.03	-.50	.15	4.6	.468	0.0	.828	4.6	.338
	MS	2.25	-1.35	-.88	-.41	.27						
18	LAR	1.99	-1.12	-.89	-.41	.22	17.1	.004*	4.1	.042*	13.0	.011*
	MS	1.62	-1.54	-1.04	-.55	.10						
19	LAR	2.34	-1.00	-.69	-.27	.26	14.2	.014*	2.2	.137	12.0	.017*
	MS	2.02	-1.17	-.84	-.46	.02						

20	LAR	2.79	-1.12	-.74	-.35	.20	4.3	.504	0.0	.923	4.3	.366
	MS	2.81	-1.16	-.79	-.30	.18						
21	LAR	2.31	-1.38	-1.04	-.64	-.12	5.5	.359	0.0	.925	5.5	.241
	MS	2.28	-1.51	-1.13	-.74	-.29						
22	LAR	1.99	-1.97	-1.57	-.96	-.30	3.0	.701	0.1	.769	2.9	.573
	MS	1.93	-2.06	-1.54	-1.02	-.39						
23	LAR	2.57	-1.87	-1.38	-.91	-.21	9.0	.109	0.0	.882	9.0	.062
	MS	2.53	-1.77	-1.19	-.69	-.06						
24	LAR	2.14	-1.32	-.93	-.27	.41	9.2	.101	0.6	.455	8.7	.070
	MS	2.00	-1.47	-.99	-.35	.56						
25	LAR	2.86	-1.35	-.92	-.48	.15	2.2	.818	0.1	.792	2.2	.708
	MS	2.93	-1.33	-.96	-.45	.12						

---

*Note.* \*  $p < .05$ , \*\*  $p < .01$ .

Table 3

*Item Parameters for the Combined Sample (N = 1,503) for the Students Rating of Teachers (SRT) Scale*

Item	<i>a</i>	<i>SE</i>	<i>b</i> <sub>1</sub>	<i>SE</i>	<i>b</i> <sub>2</sub>	<i>SE</i>	<i>b</i> <sub>3</sub>	<i>SE</i>	<i>b</i> <sub>4</sub>	<i>SE</i>
1	2.20	.12	-2.74	.14	-2.34	.10	-1.46	.06	-.66	.04
2	1.11	.10	-4.45	.38	-3.80	.30	-3.01	.22	-1.78	.12
3	2.29	.13	-2.53	.12	-2.10	.09	-1.53	.06	-.87	.04
4	3.06	.14	-1.45	.05	-1.09	.04	-.55	.03	.10	.03
5	2.55	.12	-1.76	.07	-1.34	.05	-.73	.04	.03	.04
6	3.25	.15	-1.46	.05	-1.05	.04	-.54	.03	.10	.03
7	3.03	.15	-1.83	.07	-1.46	.05	-.99	.04	-.35	.03
8	2.99	.14	-1.83	.07	-1.33	.05	-.90	.04	-.24	.03
9	3.30	.15	-1.77	.06	-1.29	.04	-.79	.03	-.08	.03
10	2.27	.11	-1.38	.06	-1.00	.04	-.48	.04	.22	.04
11	2.93	.14	-1.56	.06	-1.12	.04	-.63	.03	-.01	.03
12	1.98	.10	-1.79	.08	-1.29	.06	-.72	.04	-.06	.04
13	1.74	.10	-2.31	.11	-1.85	.08	-1.25	.06	-.49	.04
14	2.60	.13	-1.83	.07	-1.42	.05	-.90	.04	-.28	.03
15	2.73	.13	-1.93	.07	-1.37	.05	-.83	.04	-.13	.03
16	2.54	.11	-1.53	.06	-1.07	.04	-.43	.03	.26	.04
17	2.48	.12	-1.56	.06	-1.13	.05	-.68	.04	-.07	.04
18	1.89	.10	-1.52	.07	-1.18	.05	-.72	.04	-.12	.04
19	2.26	.11	-1.29	.05	-.99	.04	-.61	.04	-.13	.04
20	3.00	.14	-1.33	.05	-.98	.04	-.56	.03	-.08	.03
21	2.41	.12	-1.63	.06	-1.28	.05	-.92	.04	-.46	.04
22	2.09	.11	-2.15	.10	-1.71	.07	-1.19	.05	-.59	.04
23	2.77	.14	-1.93	.07	-1.42	.05	-.98	.04	-.38	.03
24	2.22	.10	-1.56	.06	-1.16	.05	-.56	.04	.18	.04
25	3.11	.15	-1.51	.05	-1.14	.04	-.69	.03	-.14	.03

Figures

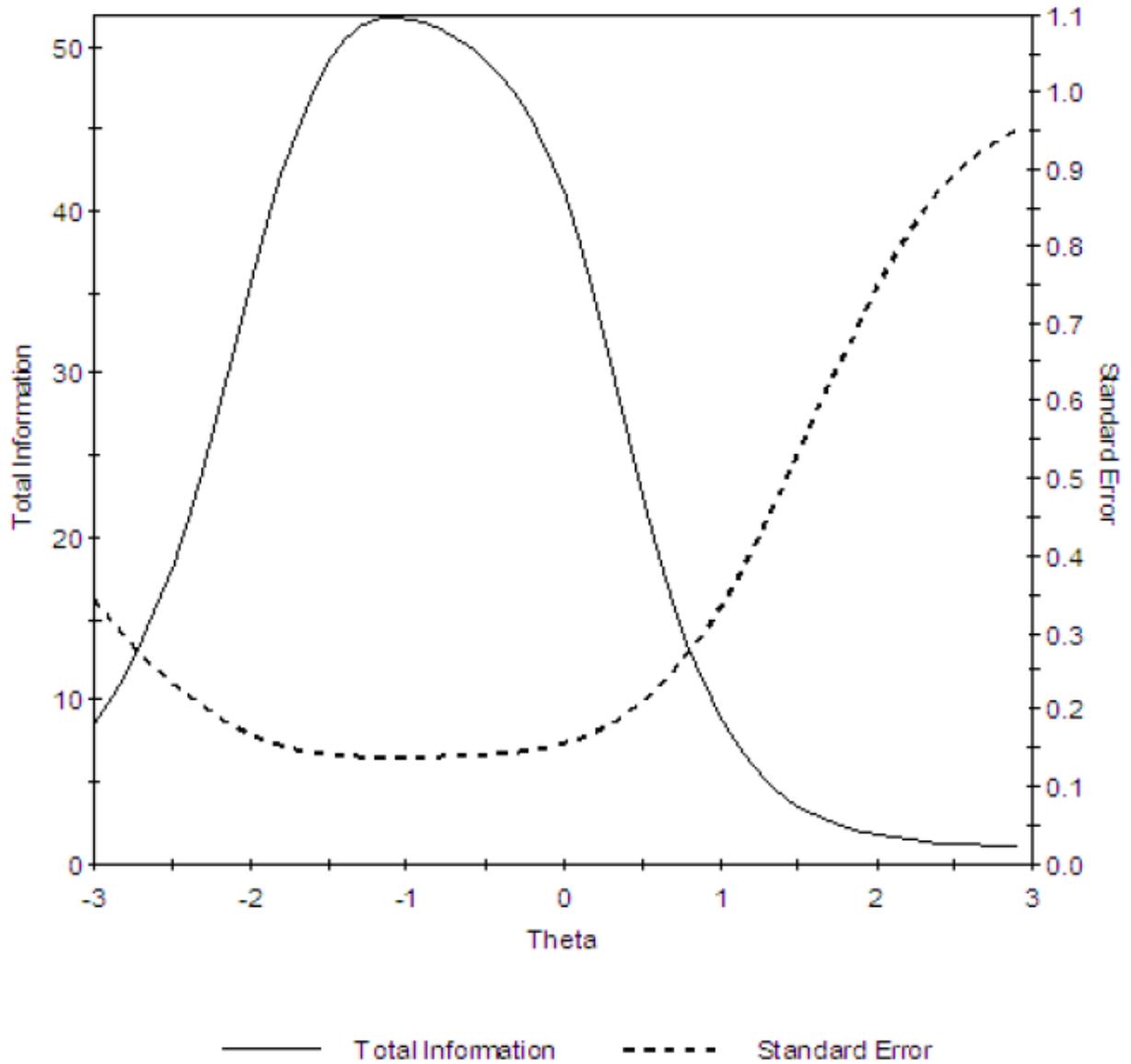


Figure 1. The Total Test Information function is high in the area below the mean between approximately -1.2 and -.8. The maximum information value for the entire test is 51.73 and 51.14 ( $\theta = -1.2$  and  $-.8$ ), which means that information from the test is centered below the mean

### Appendix A

*Directions:* Please answer the following questions honestly to help your teacher understand your experience and impressions regarding his teaching methods and performance. This information will remain anonymous, but he will receive summative results about his performance. The survey contains 25 items on a 5-point Likert scale from Weak to Excellent. Please rate your teacher's performance accordingly.

	Item	Weak (1)	Acceptable (2)	Good (3)	Very Good (4)	Excellent (5)
1	Teacher's knowledge of the subject content.					
2	Teacher's commitment to coming to the class on time.					
3	Teacher's preparation for the lesson.					
4	Teacher's ability to present an exciting lesson.					
5	Teacher's explanation of the purpose of each lesson.					
6	Teacher's ability to think deeply about the subject.					
7	Teacher's interest in student learning of the subject content.					
8	The clarity of the teacher's explanation of the subject content.					
9	Teacher's ability to lead you to understand the subject content.					
10	Teacher's use of the educational media.					
11	Teacher's skill to hold a useful discussion.					
12	The appropriateness of teacher's tests.					
13	Teacher's interest in student work.					
14	Teacher's interest in student questions.					
15	Teacher's ability to connect subject-matter content.					
16	Teacher's ability to connect subject-matter content with other areas.					
17	Teacher's ability to connect the subject content to the real world.					
18	Teacher's interest in the correction of student mistakes.					
19	Teacher's respect for students when they make mistakes.					
20	The relationship between the students and the teacher.					
21	Teacher's fairness when dealing with all students.					
22	Teacher's skill to control the classroom.					
23	Teacher's interest in student participation during the class.					
24	In comparison to other subjects, what is your evaluation of this course?					
25	In comparison to other teachers, what is your evaluation of this teacher?					

**Title:** What are School Rankings Lists of Academic Achievement Really Measuring?

**Topic Area of Submission:** Education Policy and Leadership

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## What are School Rankings Lists of Academic Achievement Really Measuring?

### Background

For several decades “think-tanks” have rated and ranked schools, and even education systems, throughout North America and the world. How schools perform on these various ranking schemes varies by the political ideology of the organization conducting the ranking (Dorn & Libby, 2013). A wide variety of reasons for the value and utility of these rankings lists are often cited. These most often include accountability to tax-payers and the ability to exercise informed choice on the part of parents. We question, though, whether these rankings lists really reflect these ideals of accountability or choice, or whether, in fact, these lists unknowingly and simply reflect some other societal construct.

In Canada, one organization that has taken on the role of critiquing school systems and ranking schools over the past decade is the Fraser Institute (<http://www.fraserinstitute.org>). This organization has focused its attention on the provinces of Alberta, British Columbia, Ontario, and Quebec. The Fraser Institute website states:

Our vision is a free and prosperous world where individuals benefit from greater choice, competitive markets, and personal responsibility.

Our mission is to measure, study, and communicate the impact of competitive markets and government interventions on the welfare of individuals. (<http://www.fraserinstitute.org/about-us/who-we-are/mission.aspx>, retrieved August 5, 2013a)

The organization describes itself as “an independent, non-profit organization with no affiliations to any political party” (<http://www.fraserinstitute.org/about-us/who-we-are/funding.aspx>). Furthermore, its “activities are funded by charitable donations, unrestricted grants, ticket sales and sponsorships from events, the licensing of products for public distribution, and the sale of publications”

(<http://www.fraserinstitute.org/about-us/who-we-are/funding.aspx> ). While the Fraser Institute may be independent of political parties, it does orient itself with a neo-liberal view of education and health as competitive markets in which consumers should be able to exercise freedom of choice to obtain the best service possible.

In the province of Alberta, the Fraser Institute annual education report is one that appears in the news and that some Albertans look to when deciding where to send their children for their kindergarten to grade 12 educations. The annual report provides overall rankings for school performance based on annual Provincial Achievement test results. It also provides some more nuanced analyses examining gender gaps in achievement as well as comparisons between actual ranking and predicted ranking based on parental income (as a proxy for socio-economic status or SES). Unfortunately, most lay people, including the media, focus on the much more easily understood “school ranking” numbers.

### **Purpose**

The focus of this paper is not to question the validity of the methods used by the Fraser Institute in its annual education report of Alberta schools. Over the past decade we, the authors, have, qualitatively, noticed a trend in which schools from low SES communities are consistently ranked very low while schools in higher SES communities are consistently ranked very high in terms of educational achievement. *Our purpose is* to examine how closely school rankings obtained through analyses of student achievement data can be replicated using SES data that include: family income, family assets, family ancestry, and parental educational attainment. We have selected these indicators of SES on the basis of research in the health field which explored the relationship between SES and “quality and length” of life for individuals (e.g., Duncan, G., Daly, M., McDonough, P., & Williams, D., 2002) as well as the work of an American Psychological Association task-force which examined SES (Saegert, et al., 2006).

## Method

In this paper we make use of the most recently available Canada census (Statistics Canada, 2006) detailed data to regress demographic data on schools ranked according to academic achievement by the Fraser Institute organization (2013b). Data used by this organization are collected annually by the Province of Alberta during the previous academic school year (i.e., the report released in 2013 is based on data from the 2011/12 academic school year). While the school rankings report produced by the Fraser Institute ranks schools throughout the Province of Alberta, we will limit our analysis to Public Schools in the Edmonton, Alberta area: approximately 170 schools in total during the period of the analysis.

In this paper we will focus our analysis on the Fraser Institute's ordinal ranking of each school relative to its peers in the province. All Edmonton Public Schools ranked in this report were initially included in our data set ( $n = 129$ ). Detailed explanations of the methodology used the Fraser Institute for determining the rank order of each school is described in their report (2013b).

Furthermore, to reduce the effects, as much as possible, of students from higher socio-economic backgrounds being transported to lower SES communities in which "programs of choice" (often referred to as "magnate programs" in the literature) have been established, we eliminated from our analysis schools having such programs since the academic achievement effects caused by low SES are simply masked by the achievement levels of the higher SES students who are transported from throughout the city to attend the schools' programs of choice. By eliminating from our analysis (a) schools with programs of choice, (b) those not ranked by the Fraser Institute, and (c) those in geographic

areas (what Statistics Canada calls Dissemination Areas<sup>1</sup>) for which Statistics Canada data were incomplete, our final sample for this analysis consisted of 79 schools.

To prepare the Statistics Canada data set for this analysis, we first identified the Canadian Postal Codes for each school within Edmonton Public Schools. The postal codes were then used to identify the Statistics Canada DA within which each school lay geographically. We reasoned that while the catchment area for each school was considerably larger than the individual DA, this would still provide us with a good indication of the SES level of the nearby surrounding area for each school. This decision was made on the basis that there are no dramatic changes in the SES of adjoining DAs in Edmonton; in other words, the transition from low to middle to upper-middle SES areas is rather gradual rather than abrupt. Additionally, for variables for which Statistics Canada simply reports frequency data, we converted the frequency data for each DA to percentages by dividing the frequencies by the total number of respondents for each DA. Thus variables were comparable across DAs.

From the 2172 variables provided to us from the Statistics Canada data set, we identified those variables that could be classified into the following categories: family income, family assets, family ancestry, and parental educational attainment. We used data reported as means or medians directly and created new variables to reflect means based on the original data. This resulted in a total of 39 demographic variables, our dependent variables, for the study.

Our regression analysis began with all 39 demographic variables and, using a backwards stepwise approach, variables were eliminated which did not contribute significantly to the variance in the data. Significance levels were held to the standard 0.05 level.

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<sup>1</sup> A dissemination area (DA) is a small, relatively stable geographic unit composed of one or more adjacent dissemination blocks. It is the smallest standard geographic area for which all census data are disseminated. DAs have a population of 400 to 700 persons. All of Canada is divided into dissemination areas (Statistics Canada, 2013).

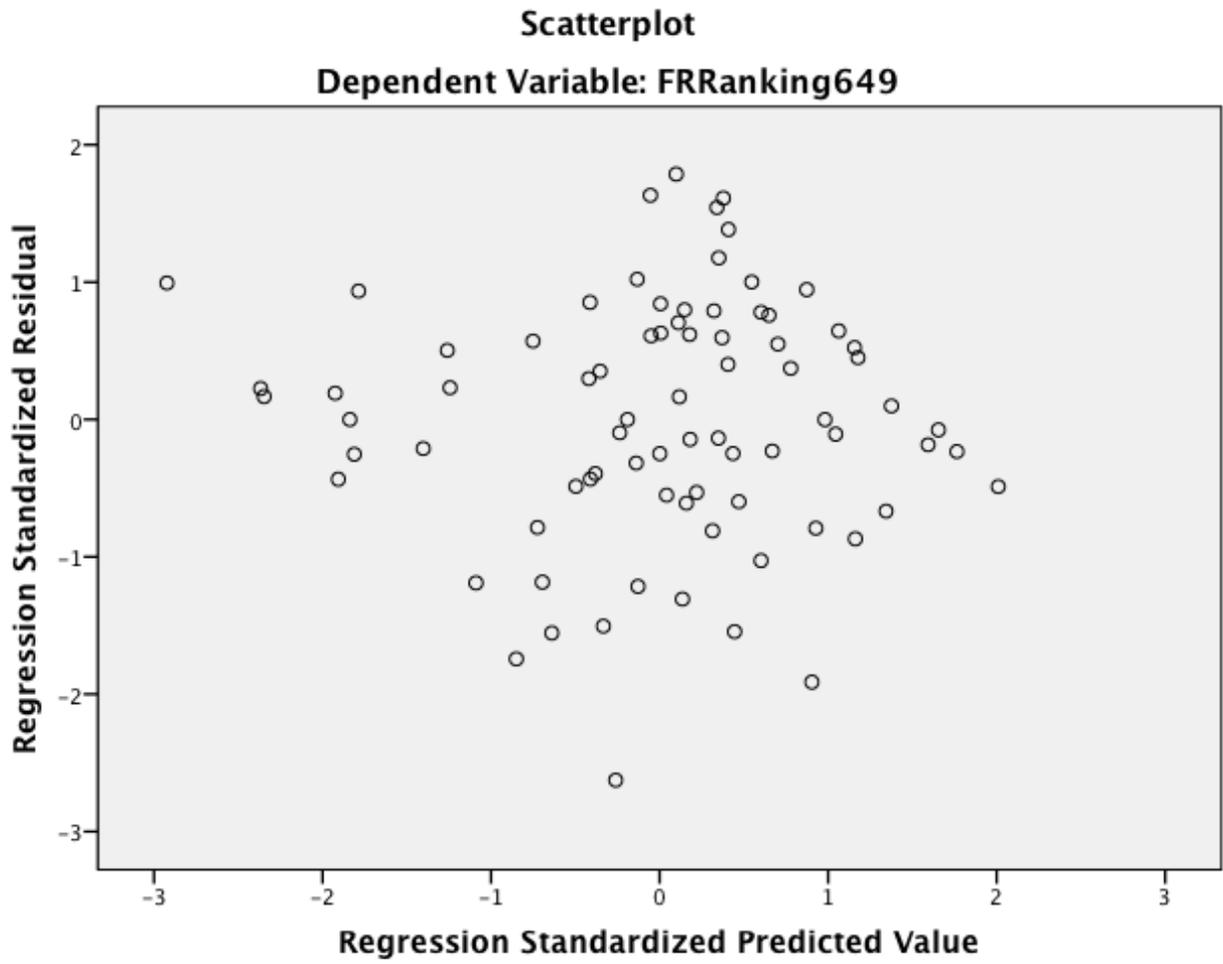
## Findings

Our backwards stepwise regression analysis yielded a model with 17 independent variables (see Table 1,  $F = 7.723$ ,  $p = .000$ ) explaining 59.4% (after adjusting for interactions among the independent variables) of the variance ( $r^2 = .594$ ), in the academic school rankings obtained from the Fraser Institute. An examination of a scatterplot of standardized residuals versus standardized predicted scores yielded no anomalies beyond three standard deviations positive or negative (see Figure 1). The assumptions underlying the multiple regression analysis were met.

Table 1. Coefficients of regression remaining after backwards stepwise regression ( $\alpha = 0.05$ )

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Standard Error	Beta		
(constant)	10132.753	2558.960		3.960	.000
Percent of lone parent families ( $x_1$ )	280.202	159.734	.171	1.754	.084
Average number of rooms per dwelling ( $x_2$ )	-87.802	18.992	-.495	-4.623	.000
Percent of dwellings needing minor repairs ( $x_3$ )	410.748	198.563	.235	2.069	.043
Percent of dwellings built before 1946 ( $x_4$ )	436.433	188.629	.186	2.314	.024
Percent of dwellings built before 1986 ( $x_5$ )	202.674	75.489	.350	2.685	.009
Percent of dwellings built after 2000 ( $x_6$ )	768.791	197.232	.848	3.898	.000
Percent of pop. whose mother tongue is English ( $x_7$ )	-905.089	191.805	-.490	-4.719	.000
Percent of pop. whose mother tongue is French ( $x_8$ )	-983.033	531.057	-.152	-1.851	.069
Percent of pop. whose mother tongue is European (but not English or French) ( $x_9$ )	-933.925	380.837	-.225	-2.452	.017
Percent of pop. whose mother tongue is South East Asian ( $x_{10}$ )	-656.851	279.005	-.212	-2.354	.022
Percent of pop. whose mother tongue is Creole-based ( $x_{11}$ )	-26926.861	11215.652	-.180	-2.401	.019
Percent of pop. who have not moved within one year ( $x_{12}$ )	-8637.603	2500.296	-5.266	-3.455	.001
Percent of pop. who have moved within one year ( $x_{13}$ )	-9203.185	2548.827	-5.577	-3.611	.001
Percent of pop. aged 25 – 64 employed without a certificate, diploma, or degree ( $x_{14}$ )	-1123.380	489.690	-.500	-2.294	.025
Percent of pop. aged 25 – 64 employed with an apprenticeship or trades certificate ( $x_{15}$ )	3975.242	866.500	1.685	4.588	.000
Percent of pop. aged 25 – 64 employed with a College certificate/diploma ( $x_{16}$ )	-765.122	422.350	-.776	-1.812	.075
Percentage of pop. aged 25 – 64 employed with a University undergrad certificate or diploma ( $x_{17}$ )	-3046.012	1249.145	-.955	-2.438	.018

Figure 1. Check of assumptions for regression analysis.



Not surprisingly, given the literature exploring the effects of SES on student achievement, this simple regression analysis yields a model that explains almost 60% of the variance in school achievement by simply drawing on demographic data from each school's local geographic area. In interpreting the results of this analysis the reader must keep in mind that the dependent variable was provided such that lower numbered ranks indicated higher levels of achievement (e.g., the school ranked as "1" has a higher level of achievement, and therefore, as far as the Fraser Institute report writers are concerned, is more desirable than one ranked "600" in their list); therefore, variables loading negatively actually correspond to local school achievement improving.

Variables such as mother-tongue origins, size, age, and state of repair of the family dwelling, proportion of lone parent families, education levels of employed adults aged 25 to 65 all combine to explain a very large proportion of the factors contributing to school achievement rank. There are some anomalies in our model that we wish to explore further to develop a deeper understanding of how these results may have come about. For example, the identification of both those people who have moved within one year and those who have not moved within one year - increased numbers of either both contributing to increased achievement ranking of the local school. Another that surprises us is related to education levels of the population aged 25 to 65; namely that being employed without a certificate, diploma, or degree of any kind related positively to increased levels of local school achievement, while being employed with an apprenticeship or trade certificate related negatively to increased levels of local school achievement. Another very surprising, to us, finding was that average or median family income did not form part of this regression model.

We, the authors of this paper, are not suggesting that because demographic variables play such a large role in levels of local school achievement we should simply give up on those communities whose

socio-economic capital is toward the lower end of our society's continuum. In fact, we advocate quite the opposite, and what is really the basis for this exercise, school academic achievement ranking lists typically promote the idea in many members of society that they are a valuable tool for selecting the best, or at least better, schools for their children; however, what we find is that parents who choose to remove their children from their local schools, because they are given choice and they have the means by which to transport their children elsewhere, actually reduce the social capital of the student population at their local school – further reducing the local school staff's ability to demonstrate how they are truly able to prepare their learners to successfully learn and master curriculum. Schools of choice further contribute to this effect by skimming off students whose parents have the social capital and who are able to provide the best supports for their children to value education and to be educationally successful.

We are very concerned about how school achievement ranking lists, such as the one from which we drew our dependent variable, are provided to members of society. The superficial message that most people who take these ranking lists seriously take away is that in order to provide their children with the best possible education they must move their children to one of those schools ranked highly. Unwittingly, they don't realize that a great deal of what makes local schools high achieving is grounded in the social capital that the families in the community bring to bear in supporting their children to learn and their teachers to teach. As a society we should, instead of focusing on easily quantified rankings, focus on the social issues underlying the lower academic achievement of some schools. Our focus needs to be on how to give all parents excellent educational experiences and relationships with their schools (i.e., with teachers, school leaders, support staff) so that they value education and see that time and effort in supporting their children is a valuable investment. Society also needs to address the social issues many children from low SES communities face on a daily basis.

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**1. Title of the submission.**

Reading the school entranceway: What “no skateboarding” signs reveal about who and what schools value

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**6. Abstract**

The entrance ways of most schools display “No Skateboarding” signs to deter youth from using school staircases and walkways as playgrounds for their wheeled devices, but are schools striking the right balance between banning skateboards and encouraging youth activity? This paper juxtaposes contemporary architectural philosophy and injury incidence data to paint a picture of a hidden curriculum deep within the subconscious of our litigious education systems. At heart: the phenomenological experience of youth skateboarders at school.

Reading the school entranceway:

What “no skateboarding” signs reveal about who and what schools value

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Growing out of pools, ramps, and skateparks, modern skateboarding terrain involved anything encountered in the modern city. ... The new skateboarding sites are not private houses or suburban roads, hidden from public view, but university campuses, urban squares, public institutions, national theatres, commercial office plazas, as well as the more public quotidian spaces of back streets, main roads, alleys, sidewalks, malls and car-parks. ... Compared to the suburbs, city cores offer more opportunities and concentrated heterogeneous social spaces. (pp. 179/186)

Kelvin Ho

*Skateboarding: An Interpretation of Space in the Olympic City*

Thus where the decentralized suburb promotes life as divorced from the city, isolating people from participatory creativity, skateboarders related individual life to the form of the city, reintroducing the city as creative and active oeuvre and thus conceptually moving the suburb closer to the complex contradictions of the city core. (p. 54)

Iain Borden

*Skateboarding, Space and the City: Architecture and the Body*

### **‘No Signs’ & ‘Accidental Skateparks’**

A few years ago, I noticed an interesting feature that seemed to be a part of the design of all of Calgary’s schools. Posted near the multiple entranceways of hundreds of schools, a sign was affixed to the brick facade. This sign didn’t bear a welcome to the school, a brand extension

of the school board's mission statement (such as "future leaders at work and play"), nor even a courteous reminder for guests to please register at the office on their way into the school. No, the message found ubiquitously on all of Calgary's school reads as follows: No Skateboarding, No Scooters, No Rollerblading (Figure 1).



Figure 1. The sign affixed to all Calgary Board of Education schools. Although hard to see at this resolution, the sign is also the canvas for two different types of graffiti: stickers from a nearby skateboard store (including one crossing out the word "no"), and pencil writing (written over top of the word "no" so the sign reads "go skateboarding"). (Grassick, 2013).

I have taught in Calgary for almost ten years and it is only recently that these 'No Signs' have emerged from the urban background to the forefront of my attention. This occurred when I was visiting a school for an after-hours meeting. When I pulled up in front of the main office and got out of my car, I stopped and laughed. At the base of the walls leading toward the front

doors, the bottom of the outer school walls were angled concrete ramps. The walkway to the school's entrance had these ramps on both sides. Although the grade and angle were not exactly consistent with the smooth transition found in skateboard and snowboard terrain parks around the world, there could be no doubt; I was standing in a half-pipe. Looking right, I saw that the school was ringed in asphalt and that rest of the school's walls ended in more ramps and raised



Figure 2. 'Accidental skateparks' outside three Calgary schools. 1A-C shows an entranceway that was part of a redesign at the turn of the century. A new office and library wing was added to the school and this entranceway was built with a ramp (not visible), multiple sets of three stairs, handrails and multi-level stone gardens with smooth concrete edges. 2A-C shows a 1960s school built into a slight hill. The main entrance (2C) includes a relatively steep set of steps which splits into two directions and two more sets of steps before reaching street level. 2B shows a section of the walkway that runs parallel to the road where a series of three benches are set just above the asphalt leading to the back door of the school (2A) where a longer set of stairs leads from the school down to a graded section of pavement and the road. 3A and 3B show the school mentioned in the introduction. The angled ramps leading to the school's entrance can be seen somewhat in 3A, but 3B clearly shows the ramps and benches that surround the school. Photos from Google Maps.

bike racks) a number of important questions immediately spring to mind: Where do these signs come from? What do they attempt to produce? What do they mean? What is it like to be a student who skateboards, scooters, or rollerblades who is confronted by these signs on a daily basis? What do these signs say to students about what their schools value?

These questions lend themselves to hermeneutic and phenomenological consideration. Hermeneutics is the study of interpreting 'texts' to derive their meaning, underlying values, and origins (Buchanan, 2010). Texts worth studying in this inquiry are school board policy statements, municipal bylaws, and the architectural space itself.

"As an approach to research in education, phenomenology involves a careful and systematic reflection on the lived experience of a pedagogical phenomenon," (Adams & Thompson, 2010, p. 736). Phenomenological lenses are particularly helpful at helping determine students' affective response to No Signs and the institutional thinking that produced them. In their 2010 paper, *Interviewing Objects: Including Educational Technologies as Qualitative Research Participants* Cathy Adams and Terrie Lynn Thompson propose a series of heuristics which allow an object to be interviewed as an active research participant. The heuristics are derived from merging the horizons of Adams's hermeneutic-phenomenological work with Thompson's Actor-Network Theory (ANT) approach. For this paper, I will employ a number of Adams and Thompson's heuristics to interview, not the No Signs, but the architectural school space itself.

Although my interpretations on school space could certainly be drawn by any student who navigates urban space in a non-mainstream fashion (parkour 'traceurs', unicyclists, BMX bikers, pogo-stickers, and those skiers and snowboarders who move ice shavings and snow from their local hockey arenas so they can jam urban rails), I will focus this paper on skateboarders

because they have been the subject of considerably more research than other de/reterritorializers of urban space. The terms “skateboarder”, “skater”, and “rider” will be used interchangeably.

### **On Architectural “Space”**

Arguably the world’s leading skateboarding academic is Iain Borden, who is neither a cultural historian nor a youth anthropologist, but a professor of architecture who specializes in critical urban re/design. In his book *Skateboarding, Space, and the City: Architecture and the Body* (2001), Borden points out that the notion of “space” in architecture has changed over the last century. Initially, the product of architecture was the design and construction of structures within space. With the development of gestalt psychology, architects began to pay more conscious attention in their designs to building space between structures as part of the architecture. Only recently has architecture started to take a new turn thanks to the writings of Henri Lefebvre. Contemporary architecture includes an understanding that space and architecture are created by those who inhabit and move through the spaces between structures. As Borden states:

Architecture, like all other cultural objects, is not made just once, but is made and remade over and over again. Each time it is represented through another medium, each time its surroundings change, each time different people experience it. (2001, p. 5)

Informed by a swath of researchers including Foucault, Lacan, Lefebvre, Heidegger, and Idhe, contemporary architecture is not an object, but a series of multiple interactions created as different subjects enter into short-term relationships with the objects inhabiting a space as they move through it.

In a culture stuck on cruise control, the [O]ther skater chooses to operate in a forgotten no-man's land. In fact, the skater thrives on using the discarded, abandoned and generally disregarded portions and structures of the society at large. Metropolitan dwellers are simply witnesses to the functioning of the city, where the experience of urban space is like that of a museum, with visitors' bodies controlled by an 'organized walking' of contrived route, speed, gestures, speaking and sound.' (Borden, p. 190, 2001).

The same entranceway of a school can be read in multiple ways and the space itself is created by different agents. To the average school 'comer-or-goer', the entranceways shown in Figure 2 are neither special nor flexible in their potential uses. They are conduits into and out of the school, nothing more. To me, the steps and handrails are virtual skatepark elements; I have neither the skill nor the inclination to negotiate these elements on a skateboard myself but I can see the potentiality of the space. To a student skateboarder, however, the "handrails aren't for people with mobility problems" (2001, p. 192), they're an object to ollie onto that allows for a downward flow to the concrete below. These youth not only see the multiplicity of affordances that certain arrangements of concrete, steps, and handrails provide, but they are able to change how they negotiate these spaces in unique ways that transform a school entranceway, for example, into a performative skatepark.

Once you are introduced to the idea that school entranceways can be deterritorialized and reterritorialized by skateboarders, you come to see the multiplicities of the shapes that were intentionally designed by school architects, but that perfectly align with the needs of young riders. In Figure 2, there are numerous stretches of smooth concrete and asphalt runways needed

to gain speed, take-off zones and landing zones for tricks, and run-outs that can be used to come to a safe stop or to redirect the board's direction for another pass.

Contemporary architecture also demands that designers consider the temporal aspect of space. A school entranceway is only such for a few busy periods at the beginning and close of the school day and at either end of recesses, breaks, and the lunch hour. For the vast majority of the day, these spaces are vacant and functionless. They are no longer entranceways, they are a meaningless assemblage of structures. Their designed monofunction dissolves into functionlessness. The space becomes entirely virtual, an area ripe for deterritorialization by skaters.

### **The Skateboard as a Reading Device**

Objects touch one another, feel, smell, and hear one another. Then they contemplate one another with eye and gaze. One truly gets the impression that every shape in space, every spatial plane, constitutes a mirror and produces a mirage effect; that within each body the rest of the world is reflected, and referred back to, in an ever-renewed to-and-fro of reciprocal reflection, an interplay of shifting colours, lights and forms. (Lefebvre in Borden, p. 105, 2001).

Skateboards 'read' the urban environments through their skateboards, arranging corridors of space (stretches of pavement, drops, rails, benches, and sets of steps) together like words in a sentence. Skateboarder and skateboard develop a human-machine relationship that Idhe (1979) refers to as "embodiment". The rider experiences the city *through* his board, each bump and crack of the urban environment is absorbed into his body. The board affords the experiencing of

the landscape as an extension of the rider (Ho, 1999). Not only is the city read through the skateboard like brail on a page is read by a trained hand, but it's song can also be heard.

I listen to the skateboard. ... Skating over concrete with consistently spaced [concrete slabs] produces a regular rhythm that varies according to my velocity. Also, the different textures of the ground surface will communicate their qualities to me aurally. A smooth skateable surface such as marble, for example, will reveal itself in smooth, calm sounds, whereas an unskateable surface such as gravel will sound coarse and unforgiving. (Ho, p. 101, 1999).

### **What Schools Value**

In his analysis of human-technology relations, Don Ihde (1979) describes how some objects that exist almost constantly in our surroundings disappear into the background. These taken-for-granted constructions remain hidden to us until they reemerge as 'Other' due to some breakdown (such as when a vending machine fails to accept your money or holds on to your Coffee Crisp, dangling it in front of your eyes behind the impenetrable glass forcefield) or due to a sudden temporal-spatial change (like the vending machine that just fell on top of someone who was rocking it, trying to retrieve a mis-vended chocolate bar). Background and alterity can be applied to the human-spatial relations which occur by different actors negotiating the same space. A school administrator is functionally blind to the space of their school entranceway; this space and its stairs and handrails has fallen into the background. This space becomes Other when the administrator leaves school one afternoon and finds that a 'mob' of skateboarding youth have reterritorialized the entranceway for 'anOther' purpose.

The No Sign was designed, mass produced, and mounted on schools for a reason: to prevent the use of school spaces by riders. Its messaging is explicit, its intent is clear. But what

values does it promote and whose values are they? What is the hidden curriculum of these signs?

### It's About Keeping Kids Safe

Why no skateboards? Because skateboards are dangerous. Doctors, administrators, and school board lawyers are worried about possible litigation stemming from skaters colliding with pedestrians or from parents expressing outrage that their children were injured while skateboarding on the school's property (Borden, 2001).

Skating is dangerous. A number of studies from Australia, America, Canada, and the United Kingdom have found conclusively that skateboarding is one of the leading causes of adolescent injury, causing between 21-24% of all falls (Berström, & Björnstig, 1991; Konkin, et al., 2006; Harris, Allyson, Rowe, & Voaklander, 2012; Unni, Locklair, Morrow, & Estrada, 2012; Lincoln, Caswell, Almquist, Reginald, Norris, & Hinton, 2011). Most skate-related injuries resulted in non-urgent and semi-urgent traumas to the extremities that required mostly non-surgical medical interventions. Fatalities are extremely rare and other activities result in injury rates similar or great than those of skateboarding.

Cause of injury	<1 y	1-4 y	5-9 y	10-14 y	Total	% of all falls
Fall from one level to another (tree, haystack, stationary vehicle, embankment)	28	44	75	31	175	26%
Fall from playground equipment	0	38	84	9	131	19%
Fall from furniture (including chair, bed, other furniture)	18	54	30	1	106	16%
Fall from slipping and tripping	0	32	24	16	72	11%
Fall from stairs	4	16	5	5	30	4%
Fall from skateboard	0	1	4	22	27	4%
Other	6	47	40	41	134	20%
<b>Total</b>	<b>56 (8%)</b>	<b>232 (34%)</b>	<b>262 (39%)</b>	<b>125 (19%)</b>	<b>675 (100%)</b>	<b>100</b>

Table 1. The cause of fall injuries organized by age (Unni, P., et al., p. 1459, 2012).

Unni, P., et al. (2012) studied the medical records of patients treated at a pediatric emergency care centre over a three year period. Table 1 show the causes of fall injuries organized by age. Skateboarding does account for a large number (22 out of 125 cases; or 17.6%) of falls resulting in injury for youth aged 10-14, warranting its own row on the table. The number of skateboard injuries, however, is less than the incidence of injuries sustained by children falling from trees, stationary vehicles, and embankments (31/125; 24.8%), and is half as much as 'other' falls which include injuries sustained on trampolines, while roughhousing, while engaged in organized sport and in unstructured play (41/125; 32.8%). Looking at injuries due to falls for younger primary students (aged 5-9), one must notice that skateboarding related injuries essentially disappear but are replaced by a startlingly high number of injuries from falling during all sorts of activities including falls from playground equipment and furniture.

At school specifically, physical education classes and team sports cause 46% of all injuries across all grade levels, with another 38% occur during unstructured play during lunch and recess breaks (Berström, & Björnstig, 1991). Despite this schools don't come equipped with "No Playing on the Playground" and "No Playing Soccer" signs. There are values and norms at work here. Why are only a few activities seen by school authorities as being unsafe? Why is bike culture the norm, but skate culture is not?

Bicycle riding is a potentially dangerous activity that results in injuries across all age groups (Konkin, et al., 2006), but bicycle riding is the only activity that is explicitly prohibited in administrative regulations for the Calgary school board whose schools and signs are the focus of this paper (CBE, 2005). The policy mentions neither skateboards, scooters, nor roller blades nor does it make use of the broad term "wheeled conveyance" used in the City of Calgary's Parks

and Pathways bylaw (2011). If bicycles aren't permitted on school grounds, why are there bicycle racks in every school yard?

Ironically, perhaps the greatest risk to students is the one that is so socially acceptable that it fades completely into the background. Despite their risks, skateboards will never be as dangerous as cars. In 2009, cars caused 172,883 injuries in Canada; 11,451 being serious enough to require emergency medical care, and 2,209 resulting in death (Transport Canada, 2009). Regardless, a study in Victoria found that, despite living within a 20 minute walk from school, 56% of school-age children commuted by car (Underwood, 2012).

### **It's Not About Keeping Kids Safe**

No one wants to see a student get hurt at school, nor do youth skateboarders want to hurt pedestrians. Both adult authority figures and skaters alike want their schools to be safe, but, why then are other school-based activities which are as likely as skating to result in injury, permitted? How can a school prohibit skateboarding but condone the frequent use of motor vehicles?

Skateboard- made of wood, metal and plastic, costs about £100, runs on leg power; causes chips and scratches on bits of stone and metal. Car- costs a fortune, runs on poisonous shit, pollutes the air and water, fills the city with 'smog', causes the death of hundreds of thousands of people every year. Mmmmm? And yet, despite all this cars are O.K. but skateboards are evil, objects of vandalism, a dangerous menace that must be stopped. (Borden, 2001, p. 257)

'Safety' is a master signifier, a form of hermeneutic cheating that schools use to explain away activities that they don't want to understand (or don't want to take the time to understand). The hidden curriculum inherent in the No Signs does not come from a desire for safety (solely),

but also stems from the dominant culture's disrespect and aversion to countercultural youth activities. Lefebvre points out that architecture can be explored in terms of rhythm analysis. Skaters don't move through space at the same rate and in the same linear fashion as do pedestrians and bicyclists, rather they deke and weave through crowds very quickly and then occupy public common spaces (like stair cases, parking garages, and plazas) for extended periods of time. Temporal-spatially, skaters are Others.

### **Mixed Messages**

As Giroux says, the school is "organized not to eliminate differences but to regulate them through cultural and social divisions... [D]ifferences are either ignored ... or subordinated to the imperatives of a history and culture that is linear and uniform" (2000, p. 177). He uses the term "border youth" to describe those who occupy the fringes of social institutions and who must be brought into the centre. Twenty years ago, only a handful of institutions and boosters saw skateboarding as the 'best youthful antidote to urban boredom that has come along for years' (The Times of London), more usually the public dialog was about banning skateboarding from the city streets. Such concerns have now died away, perhaps from the realization that skateboarding although physically robust is not inherently life-threatening. (Borden, pp. 249/250, 2001).

The City of Calgary has an award-winning multi-phase Skateboarding Amenities Strategy that is seeking to increase the amount of skatepark space available to the city's exploding youth population. A skatepark recently opened on the Vancouver campus of the University of British Columbia. Some communities in Australia are actively encouraging skateboarding as an acceptable youth sport. Some cities in Europe, the United States, Canada,

(and even Pakistan) have opened skateboarding alternative schools. Yet there seems to be little interest by Calgary school authorities to acknowledge and accept skate“border” youth into the mainstream public space of the school.

Despite widespread cries to battle youth obesity, and research supporting the value of unstructured play (Figure 3), anti-skateboarding sentiments still permeate our schools. Giroux (2000) begs teachers to consider the roots of modern identity formation in youth so articulately, that he merits quoting verbatim here.

This is a world in which one is condemned to wander across, within, and between multiple borders and spaces marked by excess, otherness, difference, and a dislocating notion of meaning and attention. ... No longer belonging to any one place or location, youth increasingly inhabit shifting cultural and social spheres marked by a plurality of languages and cultures. (Giroux, p. 180, 2000).

Educators need to understand how different identities among youth are being produced in spheres generally ignored by schools. Included here would be an analysis of how pedagogy works to produce, circulate, and confirm particular forms of knowledge and desires in those diverse public and popular spheres where sounds, images, print, and electronic culture attempt to harness meaning for and against the possibility of expanding social justice and human dignity. Shopping malls, street communities, video halls, coffee shops, television culture, and other elements of popular culture must become serious objects of school knowledge. (Giroux, p. 190, 2000).

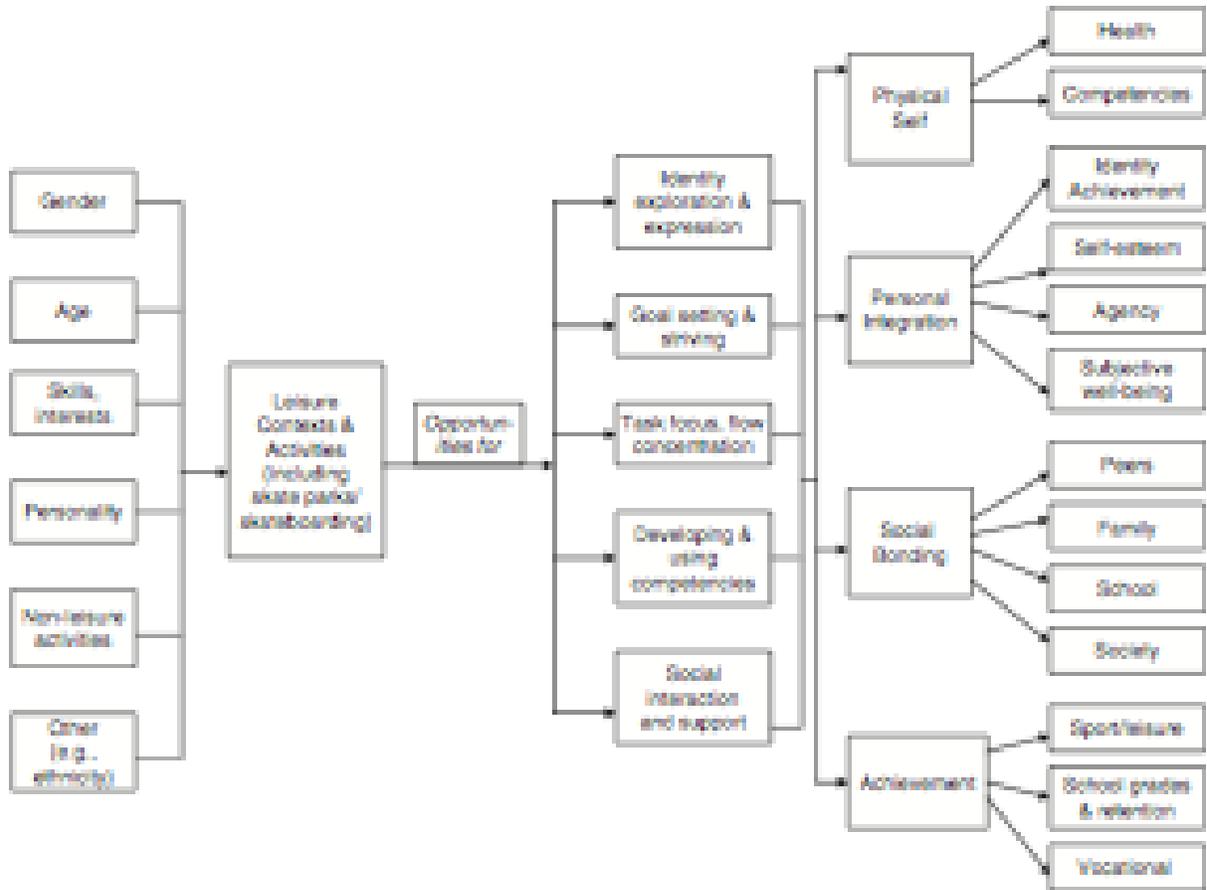


Figure 3. The benefits derived from unstructured play. (Bradley, p. 293, 2010)

Schools are meant to be inclusive spaces, but the use of No Signs and their undercurrent non sequitur logic persist and need to be confronted and resisted.

### Conditional Identities

I went into a clothes store and a girl came up to me and said, ‘If you need anything, I’m Jill.’

I thought, *This is amazing! I’ve never met anyone with a conditional identity before.* ‘Wait! Who are you if I don’t need anything?’

‘If you don’t need anything, then I’m Eugene’. (Martin, 2006)

Comedian Demetri Martin tells the joke above during a number of his shows in which he deconstructs word choices and meaning. Although the idea of a ‘conditional identity’ is a humorous one, it does apply in the case of skateboarders at school where no skateboarding is allowed.

Bruno Latour contends that, when different subjects and objects are assembled, complex human–technology hybrids emerge which engage “new intentions, associations, and actions” (as cited in Adams & Thompson, p. 733, 2011). Latour’s famous example is the ‘citizen-gun’ that results when a person and a firearm are brought into proximity. The way that the citizen-gun approaches the world and interactions is significantly different than the way the citizen-without-gun does. By extension, the configuration of skater-with-skateboard has different potentialities than the skater-without-skateboard.

A skater-without-board, compliant to the hierarchical and non-sensical rules of the No Sign and school authority, arrives to school and still sees the space of the school’s entranceways as the skater-with-skateboard would. Only now, without the tool that allows him to develop performative architecture, his ability to produce the actual space that he perceives is impaired; he is handicapped. Like ghosts able to see the world but not act upon it or a Greek character trapped in repetitive and ironic perpetual torture in Tartarus, skaters-without-skateboards are constantly disciplined. Not only suffering from not being able to occupy and negotiate space in the way he would prefer, a skater-without-skateboard suffers from a kind of ‘conditional identity crises’.

## Conclusion

Performative architecture, such as skateboarding and parkour, have different intention than traditional forms of architecture. They are less about “form, space, and materials, and more about critical place-making that seeks to subvert the power of hierarchies inherent in building edifices. ... Interestingly, the apparently powerless, can use the ‘tactics’ of movement and timing to usurp that power momentarily. ... Architecture has always repressed the ‘other’. (McGaw, p. 219/220, 2009)

No Signs are about oppressing skate“border” youth just enough that they’ll conform to institutional norms which emerged decades before their sport. The hidden curricular message being received is loud and clear: If you’re a student who is book smart, you’ve got it made. If you can draw, you’ve got a gift. If you are good with computers, you might be kind of a nerd, but you’ve got a future. If you’re a creative writer, teachers will love you. If you’re a skater, you’re not welcome.

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**1. Title of the submission.**

Teacher as Dungeon Master: Using Dungeons & Dragons to inform middle school curricular transformation

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**6. Abstract**

Across North America, teachers struggle to keep students engaged, to meet district standards, and to set them on career pathways where their skills and interests will be well-used. A way forward can be found in the original *Dungeons & Dragons* roleplaying games of the 1980s. The key is identifying student interests, changing how curriculum is organized, and designing “quests” and “feats” which require students to master new abilities and move through a progressive tree of skill development.

Teacher as Dungeon Master:  
Using Dungeons & Dragons to inform middle school curricular transformation

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*Filled with dread, the group of adventurers peered around the bushes towards the large brick keep that held their treasure. Within the walled towers of the Arcane Academy lurked the Dire Necromancers of Administrivia and their undead servants, animated through an unholy combination of cheap coffee and dark magicks. The party ducked quickly for cover as two of the*

*ghouls suddenly appeared from the direction of the parking lot and stumbled for the front door, the putrid stench of caffeine and perfume billowing off their shuffling corpses. The adventurers quickly rolled their twenty-sided dice to check their fortitude. The six-year-old paladin, with his higher-than-average constitution score, rallied the group and urged them to bolster themselves. As the five-year-old thief disappeared under her elven cloak and crept off to look for an inconspicuous point of entry, the young wizard looked doubtfully at the high tower window of the Academy. Getting the vellum scrolls of knowledge might take a little longer than he had originally thought.*

\* \* \*

Twelve years later, most of these students will finally emerge from the dungeons of their mandatory schooling. Although some will carry found treasures and will be eager for their next quest, many will be beaten and bruised as a result of their constant battles against the competitive hordes in their classes who fought with them daily for the limited attention of barely-interested educators.

The teachers too had been shaped and scarred by the same system and had eventually become trapped within it, their summer vacations providing only a brief resuscitation once every solar cycle. Formerly engaging spellcasters who could combine various elements into a lesson that would captivate and expand the minds of their students, these acolytes of industrial education now use their skills in a cruel ritualistic fashion. Putting slide after slide onto their projectors, they cast monotonous lecture sleeping spells over their classes before summoning standardized tests, externally-produced measurable outcomes, and similar accountability beasts to pulverize their pupils physically and psychically. These teachers probably care that they are inflicting pain and suffering, but most days, they can hardly be bothered to look any one of their students in the eye (where they might recognize the slowly dying soul within)

There has to be a better way.

### **People Trapped in Glass [School]Houses Seem Stoned**

The problems of the industrial model of education that grew out of Western Capitalism, Scientific Management, and the Tyler Doctrine are not ground-breaking news. Neither is the increasingly-common sob story from teachers that today's millennial generation are more

difficult to engage than those who came before. Today's kids are less likely to congenially complete pointless busy work without complaint (either from their own mouths or from the mouths of their ever-present hover parents). It is not really fair to place fault with one party or the other. Many kids *do* want to be edutained; the cell phone in their pocket at any second has the potential to create an opportunity for something a thousand times better than even the best lesson on subject-verb agreements or the Canada's Constitution Act of 1982. How many lessons are that great anyway? Many teachers *do* plan terrible lessons and expect all students to be engaged at all times and every group of students to be the same as the last. Finally, many parents *do* hover like helicopters and arrive seconds after their children experience any discomfort (or carpet bomb all obstacles out of the way with a few proactive phone call strafing runs and email napalm deployments).

Isn't all of this the anticipated result of maintaining a broken structure even after all parties involved know it's broken? Certainly everyone is aware of and complicit in the system and the structure of the 20th century educational system. Together teachers, students, and parents can see into the glass school house and point to all the faults. The kids know that a great deal of what they're learning has no real connection or bearing on their lives or interests. The teachers know that externally prescribed assessments, reporting, and initiatives imposed alongside ever-decreasing budgets are taking away from their work and their students. Parents are reacting to a system that provides lots of evidence that it cares less and less for individual children and increasingly on average scores on international and inter-district exams. To the outside observer, it must seem like the people trapped in glass [school] houses must be stoned. But the control dramas and emerging neuroses of students, teachers, and parents are the product of being trapped with a hegemonious power that they don't know how to overthrow. My suggestion is to start by picking up a copy of the *Dungeons & Dragons Player's Handbook*.

### **D&D for Dummies (Skip this Section if You're Already a Level 21 Geek)**

The authors of the current (4th) edition of the *Dungeons & Dragons Player's Handbook* subtitled *Arcane, Divine, and Martial Heroes* begin as follows:

Before roleplaying games, before computer games, before trading card games, there were wargames. Using metal miniatures to re-create famous battles from history, wargamers were the original hobby gamers. In 1971, Gary Gygax created *Chainmail*, a set of rules that added fantastic creatures and magic into the traditional wargame. In 1972, Dave Arneson approached Gygax with a new take; instead of controlling a massive army, each player would play a single character, a hero. Instead of fighting each other, the heroes would cooperate to defeat villains and gain rewards. This combination of rules, miniatures, and imagination created a totally new entertainment experience, and in 1974 Gygax and Arneson published the first... DUNGEONS & DRAGONS game.

(Heinsoo, Collins, & Wyatt, 2008, p. 7).

The first Player's Handbook (PHB) published in 1978 became a seminal piece of gaming literature, providing the architecture and algorithms used in all role playing games (RPGs) that followed include today's massive multiplayer online RPGs (MMORPGs) like the *World of Warcraft*.

Players develop characters with different physical and mental attributes. These avatars are designed with complex backgrounds with race and motivation coming into play. Each player also chooses a character's class which determines their specialties, strengths, and weaknesses. Fighters, for example, are strong and have high endurance and are capable hand-to-hand combatants. Spell-casting wizards, however, are physically weaker but can launch devastating ranged attacks that help to control the flow of entire battlefields.

Each game of D&D involves multiple player-characters (PCs) and a Dungeon Master (DM), a non-player individual who designs the adventure, the landscape, and who controls the actions of all non-player-characters and determines the outcomes of all events and interactions in the game. In computerized derivatives of D&D, the Dungeon Master can be understood as a combination of the game designers who storyboard the quests and develop the monsters and the programmers who create the "game engine" that determines action success and failure.

D&D is a role-playing game..., where players and the Dungeon Master work together to craft a story of adventure... At its core D&D is a game of imagination. Players are able to act out their character, share in an ongoing story and engage in heroic combat. Unlike

computer RPGs, D&D is a social game where a group of players sit around a table and play. ... The game is framed by a series of rules to provide structure and the result of actions taken is determined by rolling dice. (Ellis, 2010, Section: What is Dungeons & Dragons, para. 2/3)

Of course, school is not governed by random throws of a dice, but it is based on a set of rules, characters, levels, abilities, and skills. D&D, despite its inner striations, it could represent a line of flight away from the predominant curricular system.

### **Personalized Learning**

A current movement in North America is towards “personalized learning” for students. Although the topic is contentious (mostly due to top-down implementation from school boards) the core tenants of personalized learning are easy for educators to accept: learning must begin with engagement, learning must be active and effortful, learning must be assessment-rich, and learning should be metacognitive and transformative (Calgary Board of Education, 2011). D&D can help with this.

One of the biggest challenges facing today’s educators is the perceived “need to edu-tain” students. Whether it is the result of growing up in a plugged-in wifi world or just the product of mundane teaching practices, students are case studies in narcolepsy. Kids need to find meaning in what they’re doing. They have to be engaged.

A lot of international attention is being paid to Finland with the Finnish education system being used as a lens through which to examine local pedagogical institutions. While reading Pahlis Sahlberg’s (2010) *Finnish lessons: What can the world learn from educational change in Finland?* many things jumped out at me, but two fundamental differences between the Finnish and Alberta education systems are worth mentioning in this essay.

In Finland, mandatory schooling starts at age seven; Finnish children start their formal public education two years later than Alberta students. This means that Finnish students upon entering the school for the first time are more cognitively developed at the beginning of their educational journeys, and they, arguably, have a greater sense of self and their personal interests. During their compulsory years of education, students progress grade-to-grade, sorted by age in much the same way as North American students, but with one considerable difference. At the age of sixteen, Finnish students choose to pursue either an academic or vocational stream for

high school and university. Either path results in respected careers and students can pursue post-secondary degrees regardless of the track they choose for their secondary education. In marked difference to North American culture, the Finns attach no stigma to those students who choose to pursue a vocational education.

In Alberta, teachers are very “streaming” conscious; the accepted pedagogical model at the middle school level is one of an inclusive classroom. Students may be working on adapted assignments based on their educational exceptionalities, but in general, the class is learning the same thing. I’ve taught middle school in Alberta for ten years so working with students in an inclusive classroom is something familiar to me. Despite what parental wishes, not all of my students will grow up to be engineers, doctors, or lawyers. Some are mechanics, chefs, and ballerinas. In stark contrast to the Finnish system, in most North American educational districts, students are not given freedom to pursue their educational interests until late in secondary school.

This essay will make use of what Guattari calls a transversality (1972/2003). Genosko (2002) defines “[t]ransversality [as] the tool used to open hitherto closed logics and hierarchies” (p. 78). Transversality is a tool which can be used to liberate and transform the routines of institutional life (Wallin, 2013). As a means to cracking open the industrial education model still employed in much of the western world, I will employ the role-playing game Dungeons & Dragons (D&D) as a transversal to crack open the existing structures of public education so its shortcomings can be better considered.

### **Learning must Begin with Engagement**

Dungeons & Dragons respects the differences of individuals and allows them to develop according to their desires. If public education was more like D&D, student engagement and identity would be handily addressed.

### **Attributes, Classes, and Skills**

The first steps of playing D&D is creating a player’s character. Of central importance in this design is assigning a character’s physical and mental attributes as they determine the prowess and abilities that enhance (or limit) how a character develops and what they are capable of doing. The six core attributes in Dungeons & Dragons are:

- Strength (Str)            measures your character's physical power. It's important for most characters who fight hand-to-hand.
- Constitution (Con)    represents your character's health, stamina, and vital force. All characters benefit from a high Constitution score.
- Dexterity (Dex)        measures hand-eye coordination, agility, reflexes, and balance.
- Intelligence (Int)     describes how well your character learns and reasons.
- Wisdom (Wis)          measures your common sense, perception, self-discipline, and empathy. You use your Wisdom score to notice details, sense danger, and get a read on other people.
- Charisma (Cha)        measures your force of personality, persuasiveness, and leadership.

(Heinsoo, et al., 2008, pp. 16/17)

Not all players have the same attributes, not all students do either. In the original version of D&D, starting attributes of PCs were determined by dice throws which meant that really low scores in any of the core attributes was possible (Myers, 2010, para. 2). Sexual recombination is kind of like rolling a twenty-sided die. Anything is possible although most outcomes fall into a middle range, with other extremes occurring less frequently. Not all students are going to have the Intelligence to be doctors. Those who are may not have the wisdom and charisma to work with people effectively and may find themselves unsuccessful in medicine as well. Being well-endowed in one attribute does not guarantee success any more than being weak in one attributes guarantees failure. Why in North American education is there still such a stigma attached to calling a spade a spade (or a non-academic student a non-academic student)? There are culturally-engrained definitions of what a "successful student" looks like, and these blind teachers to identifying other possible strengths in their students. It is essential for educators to see children not as an overall score (A+, Valedictorian) but as a unique combination of attributes, all of which can be developed (albeit some more easier than others).

It doesn't take kids very long to learn what they are interested in and to desire to explore and develop in these areas. Schooling is particularly good, I think, at killing this natural learning drive. We correct doodling, fidgeting, sass, and theatrics, but all are the unanswered screams of trapped artists, athletes, authors, and actors. Another significant aspect of D&D character development is the selection of a class. Each class of character has certain advantages and

weaknesses in terms of their attributes, skills, and abilities. There are many classes of character (and sub-classes and cross-class hybrids), but the basic categories suggested in the *Dungeons & Dragons Player's Handbook* (Heinsoo, et al., 2008, pp. 52) are the:

Cleric: A divinely inspired warrior.

Fighter: A master of martial combat.

Paladin: A champion dedicated to a specific deity.

Ranger: A ranged or two-weapon combat specialist.

Rogue: A combatant who uses stealth and slyness to thwart enemies.

Warlock: A wielder of arcane power gleaned from otherworldly entities.

Warlord: A commander who leads from the front.

Wizard : The world's most powerful purveyor of magic.

In the game, players are free to choose your class with all its strengths and limitations. In real life, I think children ultimately end up choosing their character class as well, but after they become aware of their own strengths and limitations. I suggest that educators should speed up this process a bit, and let students begin to specialize and develop certain skills and attributes during their middle school years.

In D&D, different classes require different skills sets; they can't progress with any success without developing certain key skills (Table 1).

### SKILL TRAINING

Training in a skill means that you have some combination of formal instruction, practical experience, and natural aptitude using that skill.

When you select a skill to be trained in, you gain a permanent +5 bonus to that skill. You can't gain training in a skill more than once.

The entry for your class in Chapter 4 tells you how many skills you're trained in and what skills you can choose at 1st level. For example, if you're a 1st-level warlock, you can pick four skills from a list of eight. You can take the Skill Training feat to gain training in a skill even if it's not on your class skill list. Some multiclass feats also give skill training.

The table below shows the skills available in the game, the ability modifier you use when you make that kind of skill check, and which classes have that skill as a class skill.

Key Skill	Ability	Class Skill for ...
Acrobatics	Dex	Ranger, rogue
Arcana	Int	Cleric, warlock, wizard
Athletics	Str	Fighter, ranger, rogue, warlord
Bluff	Cha	Rogue, warlock
Diplomacy	Cha	Cleric, paladin, warlord, wizard
Dungeoneering	Wis	Ranger, rogue, wizard
Endurance	Con	Fighter, paladin, ranger, warlord
Heal	Wis	Cleric, fighter, paladin, ranger, warlord
History	Int	Cleric, paladin, warlock, warlord, wizard
Insight	Wis	Cleric, paladin, rogue, warlock, wizard
Intimidate	Cha	Fighter, paladin, rogue, warlock, warlord
Nature	Wis	Ranger, wizard
Perception	Wis	Ranger, rogue
Religion	Int	Cleric, paladin, warlock, wizard
Stealth	Dex	Rogue, rogue
Streetwise	Cha	Fighter, rogue, warlock
Thievery	Dex	Rogue, warlock

### USING SKILLS

When you use a skill, you make a skill check. This check represents your training, your natural talent (your ability modifier), your overall experience (one-half your level), other applicable factors (relevant bonuses), and sheer luck (a die roll).

The DM tells you if a skill check is appropriate in a given situation or directs you to make a check if circumstances call for one.

### SKILL CHECK BONUSES

When you create your character, you should determine your base skill check bonus for each skill you know. Your base skill check bonus for a skill includes the following:

- ◆ One-half your level
- ◆ Your ability score modifier (each skill is based on one of your ability scores)
- ◆ A +5 bonus if you're trained in the skill

In addition, some or all of the following factors might apply to your base skill check bonus:

- ◆ Armor check penalty, if you're wearing some kinds of armor (see Chapter 7) and making a check using Strength, Dexterity, or Constitution as the key ability
- ◆ Racial or feat bonuses
- ◆ An item bonus from a magic item
- ◆ A power bonus
- ◆ Any untyped bonus that might apply

### SKILL CHECK

To make a skill check, roll 1d20 and add the following:

- ◆ Your base skill check bonus with the skill
- ◆ All situational modifiers that apply
- ◆ Bonuses and penalties from powers affecting you

The total is your check result.

### DIFFICULTY CLASS

When you make skill checks, high results are best. You're always trying to meet or beat a certain number. Often, that's a fixed number, called a Difficulty Class (DC). The DC depends on what you're trying to accomplish and is ultimately set by the Dungeon Master. The skill entries in this chapter give sample DCs for each skill. The DM sets the DCs for specific situations based on level, conditions, and circumstances, as detailed in the *Dungeon Master's Guide*. All DCs assume acting in situations that are far from mundane; the DM should call for checks only in dramatic situations.

### OPPOSED CHECKS

Sometimes, you make a skill check as a test of your skill in one area against another character's skill in the same area or in a different one. When you use Stealth, for example, you're testing your ability to hide against someone else's ability to spot hidden things (the Perception skill). These skill contests are called opposed checks. When you make an opposed check, both characters roll, and the higher check result wins. If there's a tie, the character with the higher check modifier wins. If it's still a tie, both sides roll again to break the tie.

Table 1. Dungeons & Dragons key skills for character classes. (Heinsoo, et al., 2008, p. 178)

There aren't many thieves who are lacking in stealth, being streetwise, or (of course) thievery. Through curricular redesign (perhaps involving a move towards competency-based education or breaking large courses into smaller modules) students could develop knowledge, skills, and abilities at school related to their fields of interest. Each student would be required to meet certain basic skill requirements in a field of study (in Math and Language Arts, for example), but they would be able to explore different skill areas to further their currere/career paths early in their schooling. The key, according to author Daniel Pink's (2011) *Drive: The Surprising Truth About What Motivates Us*, is providing students with opportunities to be autonomous, develop mastery, and pursue a purpose.

In some D&D itinerants, there are guild halls where PCs can gather to learn the skills important for different classes. Usually skill development happens more quickly in a guild hall than through occasional skill use in the world-at-large. Such is the story of arts and vocational schools. An artist learns more about painting with acrylics when she paints for three hours a day for four months straight than if she were to participate in two painting weekends *en plein air* over the course of a year. Schools should, therefore, be structured like guild halls with various

classroom spaces being allocated for different types of skill development. Although one could argue that schools are already arranged this way, the difference is that in today's classrooms, the students are grouped against their will and are organized into semi-fixed grade and class groups. The D&D school spaces I'm proposing would be more dynamic; with students coming-and-going continuously over the course of the school day, moved by desire rather than automated bells. If a young thief wants to improve their pick-pocketing skills, he can practice for six hours a day. If a young mathematician wants to master trigonometry, they can do so.

### Learning is Effortful & Assessment-Rich

So far the ways D&D can be used in teaching that I've shared are pretty superficial. A key difference would be in how knowledge is assessed and how students advance.

### Player Development & the Role of the Dungeon Master

In D&D, as characters win battles and complete tasks, they gain experience points (XP). Once a certain number of XP is reached, the character "levels up" and gains more attributes, skills and abilities as shown on of the current player hand book (Table 2).

Total XP	Level	Ability Scores	Powers and Features	Feat
0	1st	see race	class features; racial traits; gain 1 feat; train starting skills; gain 2 at-will attack powers; gain 1 encounter attack power; gain 1 daily attack power	
1,000	2nd	—	gain 1 utility power; gain 1 feat	
2,250	3rd	—	gain 1 encounter attack power	
3,750	4th	+1 to two	gain 1 feat	
5,500	5th	—	gain 1 daily attack power	
7,500	6th	—	gain 1 utility power, gain 1 feat	
10,000	7th	—	gain 1 encounter attack power	
13,000	8th	+1 to two	gain 1 feat	

Table 2. Dungeons & Dragons character advancement. (Heinsoo, et al., 2008, p. 28)

The particular sequence of events of the game, including their reward payoffs are determined by the D&D Dungeon Master (DM).

The Dungeon Master controls the monsters and villains in the adventure, but he isn't your adversary. The DM's job is to provide a framework for the whole group to enjoy an exciting adventure. That means challenging the player-characters with interesting

encounters and tests, keeping the game moving, and applying the rules fairly. (Heinsoo, et al., 2008, p. 8).

The Teacher as Dungeon Master would need to develop a number of individual tasks or series of tasks organized into “quests” for her students. These quests, like those in MMORPGs, would involve small steps that may occur concurrently and in synchronicity. A student might, for example, be working on the quest called “Make a Sushi Roll” which would require her to develop her basic knife skills, to research edible fish and types of knives at the same time that he pursues a crash course in Japanese culture and cuisine.

In most versions of D&D, when players level up a certain number of times, they gain new skills and receive points they can distribute among their attribute scores (i.e. they become stronger, smarter, or more deft while at the same time becoming more skilled). In a general sense, the same thing also happens as students move through the grades in a western school system, but I think this underlying architecture should become much more explicit.

What I’d like to see (maybe develop) is a skill tree version of Alberta’s provincial curriculum that doesn’t necessarily group specific outcomes by grade and topic with advancement based on month and year, but by grouped clusters of knowledge which branch out and interconnect with advancement based on mastery of specific nodes on the tree. Access to some branches and skills on the tree would be dependent on prior accomplishments which “unlock” new avenues for growth. These prerequisites might not all belong to a single “branch of knowledge” in isolation, but may require progress on multiple branches. We can see examples of knowledge tree structures in the lesson progression for Math skills provided by the Khan Academy website (Figure 1) and in cultural development structure of the game *Civilization* (Figure 2).

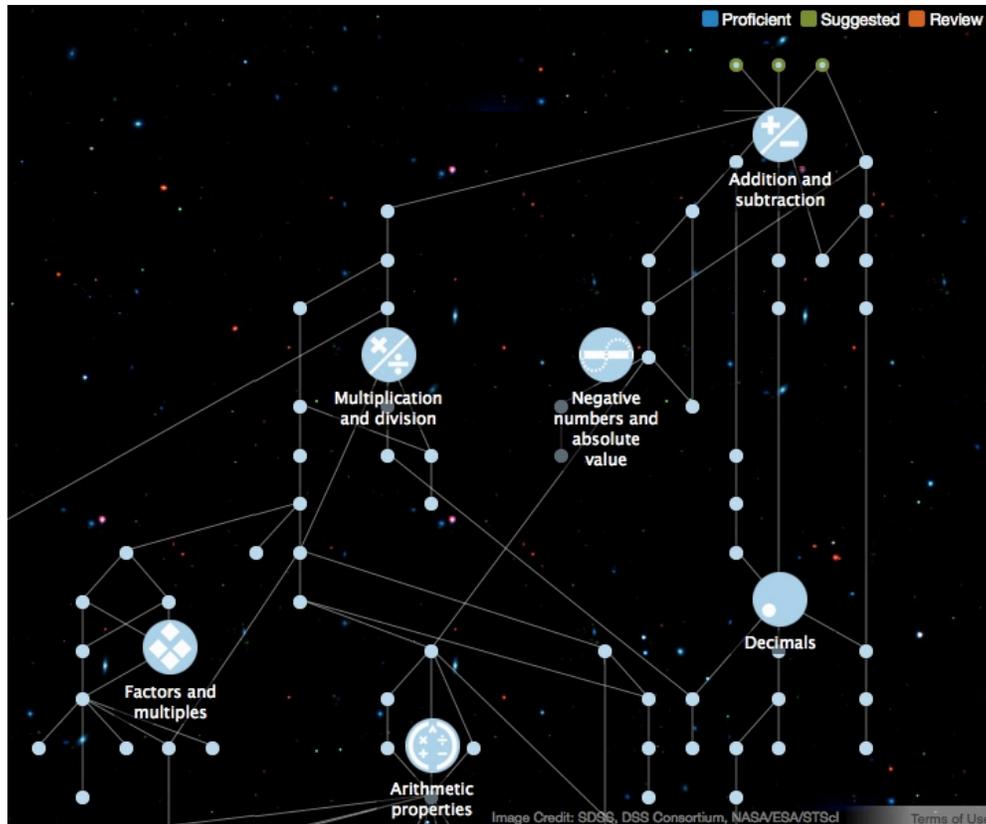


Figure 1. Knowledge tree from the Khan Academy. ([www.khanacademy.org](http://www.khanacademy.org))

In the Khan Academy, students begin with a limited number of green node skills where they can start learning about a particular topic. As they progress, they can access light blue nodes which become available, increasing the number of topics and skills which the student can explore.



exploration, physical and social skills). As students develop mastery in a particular area, more options become available to them. Some of these paths and options would have prerequisites (maybe not just the lower-level skill, but, like in D&D, certain attributes or experience levels may be needed before a particular experience is made available). For a student to start exploring mixed media arts, for example, they would need to have completed tasks relating to: basic visual design; drawing; visual representation in the language arts; and either water colour, acrylic, or oil painting.

The big job of the Teacher as Dungeon Master would be to monitor student progress and to set “Goldilocks” assessment tasks for each skill node which are neither too hard, too easy, but are just right. Each task over which a student gains mastery comes with some form of XP/credit which students can use to “level up”.

### **Min/Maxing**

In D&D, min/maxing is the term used to describe a player-character who continually increases their character’s already strong attributes ignoring their areas of weakness (e.g. your wizard can still be easily smote by a single mighty blow from a troll, but he is likely to transport the troll and all of his ancestors into a volcano before this can happen). The purpose of a D&D classroom would not be to allow students to work around their areas of weakness while pursuing their passions, but to develop holistically as well. This could be done by requiring certain “fundamental” skills and knowledge prior to leveling up.

### **Feats**

In a D&D school, would students wander around randomly “doing stuff” with no summative skill assessments? Would everything be based on project and module work? In D&D, “feats” are special abilities which are granted at certain levels. For example, at level 8, a fighter might suddenly be able to fight with weapons in both hands, something that was previously impossible (or which incurred huge penalties to his attack strength). Instead of awarding similar abilities to students in a D&D classroom, the Teacher as Dungeon Master could assign particular feats as a summative assessment before a student could level up. This means the student would have to demonstrate knowledge and skill in all of the modules that they’ve completed up to that point. For younger students, these feats would be very similar (since less

specialization is available at lower levels). For older students, these feats would become highly personalized. These could take the forms of tests or project-based tasks. Regardless, once the student has completed their assigned feat, there should be little doubt whether they are ready to level up or not.

### **Learning is Transformative**

Once a student can successfully demonstrate knowledge and skill in a certain number of areas (and has completed the required feat) she will level up and be able to work on increasingly difficult concepts and tasks. This is no different than the current grade-based model except that progress is not limited to a ten-month academic year; it happens when a student demonstrates mastery.

### **Branching Out**

Besides new modules only becoming available along a single trajectory (Trigonometry 1 granting access to Trigonometry 2, for example), branching would occur as each new level is reached (Trigonometry 1 branches into Trigonometry 2, Drafting1, and Architectural Studies 1). As a student progresses, his skill tree would become increasingly dendritic; with more possible fields (breadth) available and more specialization along particular branches of knowledge (depth).

At any point in his schooling, a student might decide he needs to learn a skill from a different part of the tree. For example, a student who has started to specialize in writing might decide they need to develop some illustration skills. This student could start working on developing artistic ability, but would need to complete the prerequisites to illustration prior to attempting an advanced skill first. Prerequisite knowledge and skills would not be waived. If you want to illustrate children's books you either have the required skills or you don't. Advanced students developing knowledge on new branches would have to demonstrate their mastery, but would likely be able to progress through feats more quickly than younger, less-experienced students.

### **Defining & Changing Classes**

At some point, a student in a D&D school might choose to specialize in one particular field. This would likely happen early in the teenage years, far sooner than is allowed for in Alberta's educational current system. The student would spend more time working with certain teachers in identified areas. Like hybrid classes in D&D, sometimes a student will want to develop in two areas. It may take longer for skill development and leveling up, but this is to be expected when a student is trying to master multiple branches of knowledge. Eventually the students might develop enough on certain branch of the curriculum tree that they may take a name for their program of study (e.g. Digital Storyteller, Biologist/Healer, Mathematician).

### **Equipment**

In D&D, some equipment is specific to certain character classes at certain levels. A level 4 wizard, for example, cannot wear heavy armor (no wizards can) nor can she wield the Mighty Staff of Ra (level 20) because it will either not work for her or burn her face off given her low skill level. In D&D education, beginners start with beginner tools and progress to more advanced tools. Only the most advanced twelve-year old designers and writers would need MacBook Pro laptops; these mighty tools would only be misused unless they are in the hands of students working on complex multi-media, content authoring, and design tasks. Students beginning their guitar explorations would start with ukeleles or half-size acoustic models so they can learn the basic skills; at higher levels they would move on to semi-acoustic and electric models. At the highest levels, they might design and construct their own guitar to meet their personal preferences. Until students reach a specific level or a specific part of the learning tree, their tools stay basic, giving them time to master them. Equipment that is used repeatedly becomes integrated; it becomes an embodied autonomic extension of the body, not a clumsy tool. D&D education recognizes this sort of development and many feats would require mastery of equipment in addition to a complete grasp of concepts.

### **Magical Artifacts**

Sometimes, a player-character comes across or is awarded an item of magic which grants special bonuses. This can happen in a D&D classroom too. A student with particular artistic skill, for example, might be awarded with the Fabled Digital Tablet which will allow them to do considerably more with their digital painting program than they could with a mouse and

keyboard. The student working on mindfulness and meditation might “come across” a singing bowl that allows them to create a sense of calm in the room.

### **Conclusion- Putting Real Learning First**

In 2009, the Alberta Teachers’ Association put out a document called *Real Learning First: The Teacher Profession’s View of Student Assessment, Evaluation and Accountability*. Right after the introductory preamble, the document reads:

1.A29 Procedures used to evaluate student achievement must be designed so that they

1. are fair, just and equitable;
2. motivate students;
3. instill confidence in students’ abilities to learn and succeed;
4. test a variety of knowledge, skills and attitudes;
5. provide the teacher with information to make informed instructional decisions

(ATA, 2009, p. 4)

Don’t you think that a D&D classroom could address the above recommendations? Wouldn’t Students as Player-Characters and Teachers as Dungeon Masters insist and deliver upon these five key points?

We need to remind ourselves that the function of schools is broader and deeper [than high test scores] and that what really counts is what people do with their lives when they can choose to do what they want to do. In fact, I would argue that the major aim of schooling is to enable students to become the architects of their own education so that they can invent themselves during the course of their lives. -Elliot Eisner (ATA, 2009, p. 7)

A Dungeons & Dragons curriculum will never exist, but pieces of this pedagogical transversal are adoptable in part or in whole. The D&D metaphor can help education leaders make schooling more engaging and assessment more authentic. If these two changes can be evoked, we’re well on our way to meaningful transformation.

\* \* \*

*The six-year-old paladin, smiled as he snuck a peak into the artisan hall next door where his young sister worked wet clay into a large mermaid and their young friend, the cleric, wove cedar strips together to make a wide-brimmed hat. The Arcane Academy had not turned out to be as terrible as they had feared and all party members had opted to stay and grow. He smiled to himself as he thought about all of the coffee-drenched ghouls that he and his companions had had to smite upon their arrival, but, now that the blood had dried up and the smells and screams had receded, this place was getting down-right cheery. Looking at the time, he rearranged the broadsword slung on his back and took off down the hall towards the training room. This was going to be another good day.*

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**Title of the submission**

Learning Motivation and Circadian Preference among Japanese University Students

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**Abstract**

It is said that university students are found to be the most commonly characterized as “*night owls*” and “*sleepyheads*” among other groups of the same age in Japan. The aim of this study was to further elucidate the association between circadian preference and motivation for learning among Japanese university students. A total of 191 undergraduate students at Hosei University, located in Tokyo, completed the questionnaire battery. The questionnaire included followings: Japanese version of Morningsness-Eveningness Questionnaire (Ishihara et al., 1986), Achievement Goals Scale (Murayama, et al., 2011) and Autonomous Motivation Scale (Nishimura, et al., 2011).

As a result of an exploratory factor analysis, two factors (Mastery-Goal and Performance-Goal) from Achievement Goals Scale and four factors (Extrinsic-Regulation, Intrinsic-Regulation, Identification-Regulation, and Introspection-Regulation) from Autonomous Motivation Scale were obtained. Four types of the achievement goal (high only Performance-Goal, high only Mastery-Goal, both high, and both low) and three types of the autonomous motivation (high only Extrinsic-Regulation, high Identification- and Introspection-Regulation, and high only Intrinsic-Regulation) were classified by cluster analysis, using Ward’s method. An interaction effects in multiple regression analysis were found that the higher Introspection-Regulation, the more nocturnal the respondents showed in the high only Mastery-Goal condition. Furthermore, the higher Mastery-Goal, the more morningness the respondents showed in the high Identification- and Introspection-Regulation condition. These results indicate that the relationship between circadian preference and motivation for learning may not be that simple. It is important for students to recognize how influence the lifestyle on their academic performance through appropriate education of sleep hygiene.

**Hawaii International Conference on Education  
Submission 617**

- 1. Title: Partnering for Systemic Transformation of  
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**This paper and presentation describe the partnership formed to transform teacher's geometry understanding and instruction between the Florida Atlantic University College of Education, Honor's College, and the School District of Palm Beach County. In year one of the program, the partners developed a year-long curriculum to extend and support both content knowledge, through mathematics faculty from the Honors College, and methodology/ pedagogy, through the Department of Teaching and Learning. Through ongoing program evaluation and participant feedback, the partners reviewed outcomes and refined interventions to maximize results for both students and teacher participants. The year one results began with student success on end of course exams and extended to systemic teacher change in both instructional methodology and pedagogy. Currently in the third year of the partnership, the presenters will discuss lessons learned, both positive and not so positive outcomes, and next steps.**

**Hawaii International Conference on Education**

**January 5-8, 2014 Honolulu, Hawaii**

**PAPER SESSION PROPOSAL TITLE PAGE**

**TITLE** **DANCING WITH THE FUTURE: A New Hope for Aboriginal Education**

**TOPIC AREA** **Indigenous Education**

**DESCRIPTION** After decades of disappointing results, it is difficult to deny that traditional approaches to the provision of education to First Nations populations have been, at best, ineffective and the time has come to consider alternative approaches. This presentation will chronicle the journey and results to date of Wild Rose School Division as it strives to redefine its approach to First Nations Education to better reflect the core values of dignity, purpose and hope.

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# DANCING WITH THE FUTURE:

## A New Hope for Aboriginal Education

### Work in Progress Abstract

#### Overview

After decades of disappointing results, it is difficult to deny that traditional approaches to the provision of education to First Nations populations have been, at best, ineffective. Given there is little reason to believe that, even with additional resources and effort, this might change, it is likely that the time has come to consider alternative approaches. This thinking underpins recent developments in Wild Rose Public Schools (WRPS) as it strives to redefine its approach to First Nations Education to better reflect the core values of dignity, purpose and hope. This presentation will chronicle the journey and results to date.

#### Background

In large measure, traditional approaches to Aboriginal education have been rendered ineffective for two broad reasons. First, they have tended to focus primarily on trying to change indigenous populations to better "fit" the system, both at the school, as well as at the larger societal level. This has been compounded by dictating to these populations how this change will be achieved with little consideration given as to what they might perceive their own needs and wishes to be. Somewhat related is a second issue which results from decisions being made based on incomplete understandings both of what is at issue and, subsequently, what action is appropriate. Consequently, we have too often focused our efforts on addressing the "wrong" problem and utilizing the "wrong" approaches. In education, the unfortunate result has been that, not only have the fundamental problems never been properly identified and addressed, but too many First Nations students have turned away from the one institution that offers them a real means to a better future.

In WRPS, over the past 3 years, we have sought to address these challenges through beginning to explore the potential of utilizing the education system differently to meet the *self-identified* needs of First Nations students in *culturally sensitive* and supportive ways. Fundamental to this approach are the following key understandings:

1. Public education is an extremely powerful resource that can be utilized differently to address the needs of First Nations students;
2. First Nations communities are best able to identify the needs of First Nations students and to provide insight on how best to meet these needs;
3. All work must be culturally sensitive and appropriate; and,

4. Within the expectations inherent in a relationship built on mutual respect, it is possible for the education system and First Nations community to work together to develop the capacity of the community to meet its identified needs.

For many of our most at-risk Aboriginal students, an essential first step is to rebuild a solid inner core based on traditional cultural teachings. Additionally, though, there was a desire to create a forum to enhance cultural understanding in the education system and broader community. In response, the division created the Aboriginal Resource Centre (ARC) which serves as the cultural/spiritual "centre" for students and the program in general. Recently captured in a short documentary to be released this fall, the work of the ARC will be extensively reviewed as it is key to the many successes of the students.

In pursuing this work, a deliberate decision was made to avoid formal, contractual agreements. Instead, agreements have grown out of respectful dialogue and have resulted in a number of positive, collaborative undertakings that extended beyond the scope of regular "education" and have served to enhance community relations. These outcomes along with the transformation of at-risk students into community leaders will be presented.

Finally, given the success of the initial "informal" work, the following next steps will be reviewed as part of the presentation

1. Expansion of the program to include an academic component built around a "Certificate of Aboriginal Studies" to be available as a graduation enhancement to students completing the course of studies; and,
2. A formal study of the initiative to measure the impact of more culturally-appropriate approaches to learning on program completion rates and students' sense of dignity, purpose and hope.

## **Summary**

While much of the original thinking for this program was presented before the *Standing Senate Committee on Aboriginal Peoples* in 2010, the story lies in the work of turning the vision into reality. While each situation is different, this presentation will share the insights garnered through the journey of one Alberta school division and will provide much material for dialogue on creating a future of possibility and hope for Aboriginal youth rather than one of futility and despair.

# Celli speaks to senate committee

**Superintendent speaks on helping First Nations students succeed in school**

**Courtney Whalen**  
Western Review

It's not every day a person gets to stand up in front of a group of the country's senators, but on Oct. 7 Wild Rose Public School Superintendent Brian Celli did just that.

Celli was speaking to the Standing Senate Committee on Aboriginal Peoples that is currently looking at ways to reform First Nations primary and secondary education systems.

"They are engaged in a cross country exploration," said Celli. Although Wild Rose Public Schools includes a sizeable First Nations community, Celli said he wasn't sure why he had been invited to speak to the senate committee.

The answer, it turns out lay with something the school division took on last spring.

The committee had seen some information on the First Nations Youth Forum held by the division last spring where First Nations youth shared their perceptions of the school system.

What came out of that forum, said Celli, was that First Nations

students said the issues had little to do with the school itself, but instead how outside forces going on in their lives affected the time they spent in school.

For example, Celli said, if a student is worrying about something going on in their family, or issues such as drugs, alcohol or abuse, understandably their mind won't be on what's happening in school. However, with none of that background information at the school only address the seeming inattention instead of the cause of it.

Celli gave a five minute presentation to the senate committee and then spent the next hour answering questions and taking part in a dialogue.

"What I was talking to the senators about is that we have to ask the right questions," said Celli.

The issue in the past hasn't been that efforts haven't been made when

it comes to First Nations youth in the school system, it's that the approach has been the wrong one.

The question in the past has been what to do to make First Nations students fit into the system. Celli said the better question is how to best utilize the "vast resource" of public education to address the root issues and then work on turning that into academic accomplishment.

"I think we do have something to share," said Celli of the work Wild Rose Public Schools is doing in partnership with the First

Nations communities in its area. In addition to the youth forum the school division is working with the Rocky Native Friendship Centre to look at key understandings identified by the division and its partners.

"We are not the only player here," said Celli.

In the relationships that are being built he said all dealings are based on mutual respect and no formal agreements exist.

The division doesn't have all the answers, but the progress they've made is something he was happy to share with the senate committee.

## PASS THE BUCK



Paul Spurrell and Reg Hamilton of the Drayton Valley Legion present a donation to Colleen Sekura of the Health Services Foundation.

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## Aboriginal resource centre offers support for students, community

### WRSD funds centre that will work with students and offer traditional teaching and more



Louise Russell, the new aboriginal community resource worker for WRSD Public Schools in the new aboriginal resource centre that is opening up this month.

VICTORIA PATERSON | THE MOUNTAINEER

BY VICTORIA PATERSON  
STAFF REPORTER

Wild Rose Public Schools is getting innovative with its approach to aboriginal students by opening up an aboriginal resource centre for the community to use.

"This service has never existed and always should have," said Louise Russell, who has been hired as the aboriginal community resource worker to run the centre.

Russell said the centre was the initiative of Superintendent Brian Colli, who found the funds in the budget to get the centre started. The Aboriginal Resource Centre is located behind Ecole Rocky in the former kindergarten mobile but has been fixed up for its new use.

"We're going to run student, family and community projects in the centre," Russell said.

The centre will be used as a resource for aboriginal students but is also open to community members who are looking to learn more about aboriginal culture.

"It's open to the whole community and [school] district," Russell said. She said as far as she is aware it is the first of its kind in Alberta.

For students, the centre offers a place to learn

*"This service has never existed and always should have."*

**Louise Russell**  
Aboriginal Community Resource Worker

about their traditional aboriginal culture, consult with elders or to access other resources.

"It's not to become a hangout," Russell said. Students who are there will need to be working on learning.

Russell herself is not to be a teacher and instead will concentrate on pulling in the resources for students.

"I bring in the elders, the artists, the traditional teachers, the local partners," she said.

Local partners include the Rocky Mountain House National Historic Site which will be offering chances for traditional teaching and a sweat lodge. The Rocky Native Friendship Centre was another partner Russell named.

Students will be able to take things like Aboriginal Studies for credit, as well as working toward class credits in things like art or music by working with teachers at the resource centre.

Russell gave several examples of the activities and purpose of the centre. Some of the purposes of the centre include working with parents and students on attendance issues, working with the aboriginal communities to build successful relationships with the school division, encouraging participation of aboriginal community members in school activities and events and more.

Some of the activities the centre will be putting on include the opportunities to learn about traditional uses

of meat, speaking with elders, storytelling, round dances, educational trips to museums and going to conferences.

"We will be having a culture camp," Russell said.

She said the aboriginal history of the area will be taught to students, including the old treaties and federal government legislation.

"The Indian Act will be taught here," Russell said.

There will be fundraising for some of the projects or trips Russell would like to organize for the students.

"The centre itself is going to be doing fundraising ... to enhance the journey," Russell said.

Those who might like to participate can think about volunteering. "We're always seeking volunteers," Russell said. "It's about sharing the journey."

While the centre is not yet officially open for business, Russell said there will be an open house for the community to check it out by the end of January.

## ***Innovative Approach to Aboriginal Learning***

In February, 2012 Wild Rose Public Schools officially opened an Aboriginal Resource Centre as an innovative approach to engage aboriginal students in a way that honors and incorporates their culture. It is located behind Ecole Rocky Elementary in a newly renovated portable classroom building.

For students, the centre offers a place to learn about their traditional aboriginal culture, consult with elders and access other resources. Students are offered courses such as Aboriginal Studies, as well as working toward class credits in areas of art and music. It serves as a culture-based approach to support First Nations students' efforts to complete their programs and develop a deeper appreciation of their heritage.

The purpose of the centre is two-fold:

- to act as a resource/support centre for students, parents, teachers and schools with respect to educational matters involving FNMI students, and
- to meet the need for a tangible focal point for the FNMI program in the Rocky Mountain House area.

It includes working with parents and students on attendance, working with the aboriginal communities to build successful relationships, and to encourage participation of aboriginal community members in school activities and events.

Local partners such as the Rocky Native Friendship Centre and the Rocky Mountain House National Historic Site work with the Resource Centre offering chances for traditional teaching and a sweat lodge.

The centre is also open to community members who are looking to learn more about the aboriginal culture.

Please feel free to visit this very unique setting and enjoy the welcoming atmosphere and learning environment.



### ***Our Vision***

*All youth have a right to live their life with a sense of Dignity, Purpose and Hope.*

### ***Our Mission***

*To help start a life path that guides and challenges youth Spiritually, Physically and Emotionally through traditional cultural teachings.*

### ***Our Philosophy***

*That aboriginal youth that are connected with their culture and community have a better chance to succeed. This starts with the seven sacred teachings:*

*Love, Respect, Courage, Honesty, Wisdom, Humility, Truth*

*"Aboriginal Days"*



**Hawaii International Conference on Education**

**January 5-8, 2014 Honolulu, Hawaii**

**PAPER SESSION PROPOSAL TITLE PAGE**

**TITLE** **Improving Life Chances Through Reflective Professionalism:  
Maintaining Momentum**

**TOPIC AREA** **Educational Policy and Leadership**

**DESCRIPTION** Our design-based research inquiry is mapping the journey of one Alberta school division's pursuit of systemic change. Through a widely shared vision of reflective professionalism, division leaders are working collaboratively with school leaders, teachers and other staff members to foster a culture of exemplary teaching, supportive leadership and sustained professional learning.

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# **IMPROVING LIFE CHANCES THROUGH REFLECTIVE PROFESSIONALISM:**

## **Maintaining Momentum**

### **ABSTRACT**

#### **OVERVIEW**

Our design-based research inquiry is mapping the journey of one Alberta school division's pursuit of systemic change. Through a widely shared vision of reflective professionalism, division leaders are working collaboratively with school leaders, teachers and other staff members to foster a culture of exemplary teaching, supportive leadership and sustained professional learning.

#### **RESEARCH QUESTIONS:**

To what extent is the emerging vision of "reflective professionalism" understood, shared, and considered to be making a difference by teachers, leaders and trustees?

What can be done to improve the translation of this vision into reality going forward?

#### **RESEARCH OBJECTIVES**

There are two broad purposes to this research. Our primary objective is pragmatic. We seek to better understand the processes that have successfully moved the change agenda forward, while also gaining deeper insights into the myriad of challenges encountered along the way. Contributing to the growing understanding of effective district leadership practice is our second objective.

#### **RESEARCH METHODOLOGY**

A mixed methods approach is being employed in our design based study. Participant observations, reflective journals, semi-structured and open-ended interviews as well as focus group conversations are being utilized. In this third year of the study, classroom observation protocols and staff surveys are also being employed.

#### **OUTCOMES**

As the study moves into its third year work, we anticipate that the inquiry will continue to yield insights in four broad outcome areas:

The importance of a coherent, widely shared and compelling vision emerged as a significant theme in year one. Through their words and thoughtful action, the division leadership team is consistently demonstrating its commitment to thinking about all the people in the system in a particular manner in relation to the notion of "reflective professionalism." The focus on this approach to professionalism is the deliberate intent to try to get people to think differently about

what they are doing, why, how, and for whom. Ultimately, this approach aims to help teachers move to a deeper level of obligation to all students and their learning

A second major theme was the strengthening of professionalism through attention to the development of exemplary practice . Extended staff engagement processes have generated three key documents to guide this work: the Shared Visions of Exemplary Teaching and Outstanding Leadership and the Framework for Supporting Exemplary Practice, which provides a link between the first two pieces.

Outcome three looks at the impact of structural changes to undergird sustained professional learning. Two structures have been put in place to support this work: (1) the Learning Calendar, which increased the number of Professional Learning Days to 18/year and (2) the collaborative development of a Professional Learning Model (PLM). The PLM emphasizes common understandings and language that allow teachers from every level and subject area to talk productively and professionally with each other about student learning and how best to pursue this.

A fourth outcome emerging from year one data, was the need to pay further attention to the following priorities:

- staying the course – building coherence to continue to close the gap between the vision and the reality
- building instructional leadership capacity – continuing to enhance the skills and actions of school leaders
- sustaining system leadership – creating a smooth transition to the next generation of division leaders
- implementing identified structural changes within the organization
- improving reciprocal communication
- sustaining professional relationships in communities of practice within the Division
- conducting ongoing research through classroom observations, staff surveys and stakeholder interviews.

Since the initiative began, the Leadership Team at both the school and the division levels has seen a 50% turnover in personnel. Accordingly, in addition to the foregoing, the third year of the study will probe (1) the degree of impact that this turnover has had on the work of realizing the vision, (2) the practices that supported new leaders as they developed their understanding of, and commitment to, the vision, as well as (3) the “growing edges” for the division in this regard.

In this session, evolving insights in all areas, with a particular focus on maintaining the work the work of system transformation in the face of significant leadership turnover, will be shared.

## Hawaii International Conference on Education

January 5-8, 2014 Honolulu, Hawaii

### PAPER SESSION PROPOSAL TITLE PAGE

**TITLE** **Supporting Equitable Access Through Shared Technology Services**

**TOPIC AREA** **Educational Technology**

**DESCRIPTION** Public school systems must ensure students become relatively fluent in their use of digital and online tools. Unfortunately, structural inequities inherent in the system often mean that students in rural, less densely populated jurisdictions are disadvantaged relative to their peers in more densely populated centres. This presentation will chronicle the initial efforts of two rural school divisions to address this inequity through the integration their technology services.

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# **SUPPORTING EQUITABLE ACCESS THROUGH SHARED TECHNOLOGY SERVICES**

## **WORK-IN-PROGRESS ABSTRACT**

### **Overview:**

Cultural transformation demands that citizens of the future be relatively fluent in their use of digital and online tools. Accordingly, it is incumbent upon public school systems to ensure they help students build the capacity to respond appropriately to this demand. Unfortunately, structural inequities inherent in the system often mean that students in rural, less densely populated jurisdictions are disadvantaged relative to their peers in more densely populated centres. This presentation will chronicle the initial efforts of two rural school divisions, Wild Rose Public Schools and Canadian Rockies Public Schools, to address this inequity through the integration their technology services.

### **Background:**

Across Alberta, less densely populated rural districts struggle to afford the hardware and to provide the expert supports required to build, operate and maintain high quality access to IT networks that are fundamental requirements of preparing students for the future. Unlike larger urban centres which are able to staff larger and more diverse IT teams, in the rural setting, it is more common for there to be a single person who is expected to have expert knowledge in all aspects of operating, maintaining, and developing all aspects of the system. As a result, rural IT staff often are required to work outside their areas of expertise and are only able to spend enough time to get a specific technology 'operational' before being pulled to the next project or issue. As a result, over time, the operation of the system tends to deteriorate and to become a hindrance to, rather than a support of student learning.

The Shared Technology Services initiative is intended to support the convergence of rural technical infrastructure and staffing as well as to leverage the opportunity of the Alberta SuperNet to create a closer to level playing field for all students. Where several small jurisdictions, individually, may struggle to staff a Help Desk, Network Specialist, SIS expert, Moodle guru, etc., as well as to construct and maintain robust network capabilities, as a collective, these are all much more attainable. Thus, partnerships and the sharing of expertise and resources across jurisdictions bridges gaps in service and support that smaller districts are less able to address individually.

The following are the goals for the Shared Services Project between Canadian Rockies Public Schools and Wild Rose Public Schools:

- o Create a governance model that will support the sharing of experience and expertise between school jurisdictions.

o Develop a shared technology services model that will enable multiple jurisdictions to integrate network services and to share and extend their learning and knowledge of specific technologies thereby enhancing the learning environments for students in all divisions.

o Leverage the WRPS-CRPS experience to develop guidelines and templates that will assist other jurisdictions to make the same migration more smoothly and within a much tighter time frame.

### **Outcomes:**

While there are many potential outcomes of this joint initiative proposal, for the most part, they can be grouped into the following large categories: more effective and efficient use of resources; improved access to digital environments supported by a robust architecture; and, improved learning environments for students--regardless of their geographic location.

Specifically, in the first phase of the project, it is expected that the cross-jurisdictional leveraging of expertise and infrastructure will result in the following outcomes/benefits:

1. A common, high standard of access to technology for students of both divisions.
2. Efficiencies through the reduction of redundancies (e.g., reducing data center sprawl by consolidating services into shared data centers; greater utilization of the potential of the Supernet).
3. More effective utilization of existing expertise, both in terms of technology support and the evolution of classroom instruction.
4. Increased coherence in the technology landscape.
5. Creation of the foundation from which to explore additional shared services opportunities; and,
6. The generation of a model of shared technology environments designed for elasticity and agility that can be scaled and applied rapidly to other small jurisdictions, FNMI schools, etc.

This presentation will report on developments to date in each of these areas.

### **Summary:**

Inspired by the collaboration of experts uninhibited by jurisdictional boundaries or silos of IT knowledge, the overarching outcome of the *Shared Technology Services* initiative is the creation of a world class IT platform to support the learning of all students regardless of jurisdiction size and location. Within the collaboration, each district can offer its best ideas to all and, subsequently, borrow some back knowing that within the pool is the expertise of someone who has “done it before.” The end result is an enhanced learning environment for all students, regardless of where they live.

Collaborative Anarchy in Andragogy:  
A Paradox in Collaborative Learning Models  
Through the Lens of Situated Learning

**Celia Farr**

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**Abstract:**

This poster session will examine the emergence of leader/follower roles in collaborative learning when adult learners are engaged in collaborative problem-solving experiences. It will demonstrate how team-building activities build the roles of both leader and follower and reveal the need for accountability and responsibility; adaptability and creativity: essential components to students' collaborative learning experiences in adult education. This poster session will also examine the value of anarchy within the teambuilding process and how a spirit of anarchy can benefit and grow the overall collaborative learning experience for the individual and the group.

**Proposal and Outline of Focus:**

This poster presentation will provide an introduction to Collaborative Anarchy: applying previous experience, knowledge, resources, and tools to “an informed and committed action” in a collaborative setting. The presentation will examine the Model of Situated Learning and its role in the adult learner's experience. It will discuss what takes place during collaborative problem-solving situations in the classroom and will reveal the importance of the paradoxical roles of Collaborative Anarchy within a Community of Practice (CoP).

An outline of this presentation's focus is as follows:

- Jean Lave & Etienne Wenger's Model of Situated Learning
- Daniel Goleman's research on Emotional Intelligence (EI)
- Stephen Krashen's Affective Filter hypothesis
- David Kolb's Experiential Learning Theory (ELT)
- David Kolb's Learning Cycle
- Link the characteristics of a CoP's *domain*, *community*, and *practice* to Collaborative Anarchy in the classroom
- Successful strategy building and concept mapping involving teambuilding activities

Collaborative Anarchy explores how facilitated disorder and chaos can allow for the exploration of how all may contribute and participate by building on students' respective knowledge and

resource. By facilitating an experience that builds connection between experience and activity, students are better able to reflect on how their knowledge and experience can translate into transferable problem-solving skills. Within the activities, the participants are the practitioners and facilitators; by sharing their respective repertoire of resources (Wenger, 2007), they develop a practice of specific focus that calls for “informed and committed action” (Smith, M. K., 2003, 2009).

There is an intimate connection between knowledge and activity. Learning is part of daily living as Eduard Lindeman argued many years ago. Problem solving and learning from experience are central processes (although, as we have seen, situated learning is not the same as ‘learning by doing’ – see Tennant 1997: 73). Educators need to reflect on their understanding of what constitutes knowledge and practice. Perhaps one of the most important things to grasp here is the extent to which education involves informed and committed action (Smith, M. K., 2003, 2009).

### **Theoretical Framework and Objectives:**

The research devoted to this presentation is focused on a mélange of related educational theory:

- 1. Model of Situated Learning: (Jean Lave & Etienne Wenger)**
- 2. Communities of Practice (CoPs): (Jean Lave & Etienne Wenger)**
- 3. Duality in Communities of Practice: (Jean Lave & Etienne Wenger)**
- 4. Legitimate Peripheral Participation (LPP): (Jean Lave & Etienne Wenger)**
- 5. Emotional Intelligence (EI): Daniel Goleman**
- 6. Experiential Learning Theory and Reality (ELT) (David Kolb)**

To gain a fuller understanding of how the facilitation of Collaborative Anarchy engages and strengthens legitimate peripheral participation, the presentation will also discuss how “. . . emotional reactions to instruction can heighten or dampen an individual’s desire to learn” (Wlodkowski, 2003, p. 39). Stephen Krashen’s Theory of Second Language Acquisition and Affective Filter hypothesis speak of the impact that anxiety in the classroom has on motivation, self-esteem, and learning. When an emotional hijacking takes place, these key factors of learning are influenced and the affective filter is raised – thus, raising levels of anxiety and creating mental blocks in the learning process (Schütz, 2007). Allowing collaborative anarchy to unfold within teambuilding activities allows for motivational barriers to be reduced and participation to be increased.

To meet this presentation’s objectives, narratives of student success applying David Kolb’s Experiential Learning Theory will be shared. “ ‘Experiential learning . . . involves a, ‘direct encounter with the phenomena being studied rather than merely thinking about the encounter, or only considering the possibility of doing something about it.’ (Borzak 1981: 9 quoted in Brookfield 1983)” (Smith, 2001).

In addition, Kolb’s four-stage learning cycle (or spiral) and the learning cycle’s lines of axis: feeling/thinking and doing/watching will be discussed: all essential elements of “informed and committed action” within the framework of Collaborative Anarchy. The four stages of Kolb’s learning cycle are listed below:

1. Concrete Experience – CE (feeling)
2. Abstract Conceptualization – AC (thinking)
3. Active Experimentation – AE (doing)
4. Reflective Observation – RO (watching).

Collaborative Anarchy emphasizes the importance of self-discovery while building relationships in a shared experience.

As McDermott (in Murphy 1999:17) puts it: Learning traditionally gets measured as on the assumption that it is a possession of individuals that can be found inside their heads... [Here] learning is in the relationships between people. Learning is in the conditions that bring people together and organize a point of contact that allows for particular pieces of information to take on a relevance; without the points of contact, without the system of relevancies, there is not learning, and there is little memory. Learning does not belong to individual persons, but to the various conversations of which they are a part (Smith, M. K., 2003, 2009).

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## ABSTRACT

### 10 Problems that students of color face on predominantly white campuses

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*In this workshop you will discover 10 problems that faculty, staff and administrators must address to create a sustaining, welcoming environment for students of color. How does your college stack up?*

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You'll be shown with facts and figures, examples and studies, how diversity benefits everyone. You'll learn the distinction between diversity and inclusion. You'll also:

- Discover how the changing demographics will affect you personally and the future of higher education.
- Learn how to respond to those who resist change or feel that we should not be focusing on racial diversity.
- Discuss the conditions necessary for organizational change and why your campus must undergo a cultural shift if it is to be successful in the long run.
- Learn how adopting a set of diversity themes can actually unite a campus.
- Examine your own assumptions and values as they relate to creating an inclusive campus.
- Learn new ways to look at old problems and do a better job for all students.
- Discuss what makes a culturally competent person and institution.
- Leave with practical skills and knowledge that you can implement immediately.

## **Developing Student Excellence Through Collaboration, Teamwork, and Leadership**

Programmatic Excellence and Innovation in Learning

White Paper 2013

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Topic area: Curriculum, Research and Development. Presentation format: Paper session.

Description: This research project was developed in support of the Programmatic Excellence and Innovation in Learning initiative at CSU East Bay as a means of examining how curriculum supports the university's institutional learning outcomes. This research found evidence of where students were exposed to, or developed, capacity in leadership, teamwork and collaboration skills to make them effective forces in the larger community following graduation.

## **Abstract**

This planning project was developed to identify effective teaching and assessment practices of collaboration, teamwork, and leadership (CTL) in support of the CSUEB CTL Institutional Learning Outcome. Three proposed phases involving multi-method data collection, were: 1) data collection on the current state of CSUEB CTL instruction and assessment of the value that CSUEB students and employers place on CTL competencies, 2) analysis of collected data and investigation of existing CTL instructional methods, supplemented with secondary research, and 3) formative assessment, working definitions of CTL, and recommended content and tools for instructional use, learning assessment, and faculty development to enhance student success on CTL learning objectives.

*key words:* collaboration, teamwork, leadership, and education

## **Student Learning and Success Focus**

In 2012, California State University, East Bay approved six institutional learning outcomes (ILO's) to identify expectations for all graduates to prepare them for more successful lives and careers. The ILO studied for this research project involved collaboration, teamwork, and leadership (CTL). Specifically, the ILO states: "Graduates of CSUEB will be able to work collaboratively and respectfully as members and leaders of diverse teams and communities. Working with others is an essential component of our university experience. Students work as teams on classroom assignments, on service learning projects, in student organizations, in campus service departments and elsewhere on campus. Collaborating with others, working in teams comprised of diverse members, and assuming leadership roles are essential in our workplaces and communities, so it is critical that our graduates master these skills.

- Collaboration, teamwork and leadership competencies include:
  - o understanding that effective collaboration involves an appreciation of the ways that cultural, gender and other differences can affect team dynamics;
  - o applying the key elements of teamwork and leadership, such as member roles and responsibilities and the fair allocation of work and rewards;
  - o collaborating within and leading diverse groups with patience, objectivity, respect, inclusivity, and equity;
  - o crafting consensus when presented with differing values, perspectives and priorities, and identifying, mitigating and resolving conflicts;
  - o sharing in decision-making, creative group brainstorming, active listening, and giving and receiving constructive feedback;

o being sensitive to and appreciative of the views of others, comfortable in diverse social and professional settings, and aware of their own perspectives and biases; understanding the implications of values and ethics for leadership, teamwork and collaboration.”

The purpose of the current project was to investigate students’ CTL learning and experience at CSUEB and the value of their CTL exposure. Specifically, this project sought to: 1) identify where students are exposed to CTL instruction or experiences in coursework and in co-curricular activities at CSUEB, 2) assess the value that two groups of stakeholders, students and employers, place on CTL competencies, and 3) make preliminary recommendations regarding CTL instruction at CSUEB based upon a review of the external literature and opinions of CSUEB students and employers of CSUEB graduates.

### **Background**

Organizations, including businesses and universities, have long recognized the growing value of collaboration, teamwork, and leadership. A rich scholarship has developed around each of these concepts, providing a theoretical background for understanding each. Consistent with this global valuing of leadership, teamwork, and collaboration, the CSUEB community, through a campus-wide, inclusive year-long process, has also recently identified CTL as one of our six core values, stated in the form of an Institutional Learning Objective (ILO): “Graduates of CSUEB will be able to work collaboratively and respectfully as members and leaders of diverse teams and communities.”

Following a review of existing scholarship, some of which will be discussed or cited in this white paper, for this project, our team defined collaboration, teamwork, and leadership as follows:

**Collaboration** involves working with others cooperatively to solve problems, make decisions, or create or produce something that cannot easily be achieved by someone acting alone. Collaboration requires the ability to communicate openly, to value and work with diversity, and to respond constructively to conflict. Collaboration can be short term and informal, or it can develop over time and with more formal agreements about how outcomes will be achieved.

**Teamwork** occurs where people interact on behalf of shared goals. Teamwork involves cooperating and coordinating to get work done in an interdependent fashion, with defined roles, and clear objectives. Team members are often selected as a function of the knowledge, skills and experience that they contribute to the work of the team. Teamwork is usually best accomplished with the influence of a leader, and a team that has shared accountability for its actions. Working in teams involves sharing one's expertise and relinquishing some autonomy to work closely with others to achieve better outcomes. Teamwork requires the ability to establish productive working relationships, applying interpersonal communication skills, working well with diverse others, and responding constructively to conflict.

**Leadership** is a reciprocal influence relationship where leaders enlist the support of others engaged with them in the accomplishment of a common goal. Leaders are responsible for achieving a group's shared commitments and desired outcomes. In order to be effective, leaders must be able to communicate a vision that engages others toward a common goal. Effective leaders value all team members' contributions and they interact with team members in ways that draw out potential contributions. Leaders communicate expectations, enroll others in the common goal, set the direction for team action, provide guidance and feedback, motivate followers, and encourage cooperation.

Leading national educational organizations identify collaboration, teamwork, and/or leadership skills as essential for college graduates. The American Association of Colleges and Universities (AAC&U), as part of a national advocacy and research initiative called “Liberal Education and America’s Promise” (LEAP), has produced a list of essential learning outcomes for college students, one of which is teamwork and problem solving. The California State University, in Executive Order 1065, adopted the LEAP outcomes in September 2011. In a 2013 survey of 318 employers conducted by Hart Research Associates for the AAC&U, 67% of employers stated they wanted colleges to place more emphasis on teamwork and collaboration in diverse group settings. In this same report, *It Takes More Than a Major: Employer Priorities for College Learning and Student Success*, 74% of employer respondents stated that expecting students to develop the skills to conduct research collaboratively with their peers would be a new approach to learning that had the potential to help students succeed (Hart Research Associates, 2013).

The AAC&U has also created a teamwork value rubric, which involves assessing individuals on the following qualities: contributions to team meetings, facilitation of the contribution of team members, individual contributions made outside of team meetings, fostering of constructive team climate, and responding to conflict. Additionally, the Academic Advising and Career Education (AACE) department at CSU East Bay (2010) has researched skills that employers routinely seek, and has produced a list of 15 frequently sought skills, one of which is teamwork and collaboration. The Lumina Foundation for Education recently identified collaboration as one of the significant skills college students should master as an aspect of civic learning (Lumina Foundation, 2011).

College professors and administrators also advocate for leadership training. In a report summarizing results from a study of over 50,000 students in 52 higher education institutions in the United States, the authors discuss the growing recognition in universities that leadership training is an essential component of a college education, recommending that college teachers routinely teach leadership skills, even in courses which have not traditionally focused on leadership development (Dugan & Komives, 2007).

A century-old, interdisciplinary body of literature exists on CTL. Research has developed sufficiently that some knowledge exists regarding how and why groups may be relatively effective or relatively ineffective in accomplishing goals. For example, we now know that there is not a single productive leadership style, but rather, effectiveness of leadership in a particular situation depends upon characteristics of the general situation, the particular leader, and the dynamics of the particular group (e.g., Fiedler, 1964, 1996). As another example, problem-solving may sometimes be optimized through team work, but in other cases, team work can hamper problem solving (e.g., Laughlin, Bonner, & Miner, 2002; Laughlin, Zander, Knieval, & Tan, 2003; Michaelsen, Watson, & Black, 1989). As an example of the former, recent research on collaboration in a game-playing context has piqued interest in collaboration for solving science problems. Researchers found that a group of game players, not formally trained in molecular biology, were able to identify the crystal structure of a specific retroviral protease that experts had been unable to solve after decades of research (Katib et al., 2011).

Although we know much about CTL processes, relatively less is known about how to teach these competencies to students. In *Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century*, a lengthy (more than 200 page) report of the National Research Council released in 2012, the forty-one contributing authors, representing universities

and testing, assessment, or research organizations across the United States, define a set of 21st century skill-sets and summarize the findings of vast quantities of research on the impact that these skills can have on significant life outcomes: education, work, health, satisfying interpersonal relationships, civic engagement, and other domains of “adult responsibility.” They additionally review research on what is known about how these skills can be taught, learned, and assessed. In the early stages of their work they organized the competencies, identifying three main clusters, one of which, the interpersonal, prominently includes collaboration, teamwork, and leadership:

“The **Cognitive** Domain includes three clusters of competencies: cognitive processes and strategies; knowledge; and creativity. These clusters include competencies such as critical thinking, information literacy, reasoning and argumentation, and innovation.

The **Intrapersonal** Domain includes three clusters of competencies: intellectual openness; work ethic and conscientiousness; and positive core self-evaluation. These clusters include competencies such as flexibility, initiative, appreciation for diversity, and metacognition (the ability to reflect on one’s own learning and make adjustments accordingly).

The **Interpersonal** Domain includes two clusters of competencies: teamwork and collaboration; and leadership. These clusters include competencies such as communication, collaboration, responsibility, and conflict resolution.” (National Research Council, 2012, p. Sum-3)

As the authors discuss, the bulk of research on teaching, learning, and assessing of these skills has focused on the cognitive domain. The authors emphasize that both employers and academics are recognizing that intrapersonal and interpersonal skills are equally important to life success as are the cognitive ones and thus, researchers need to shift some of their focus to the investigation of these non-cognitive skills.

A primary theme of the report is that 21<sup>st</sup> century teaching at all levels, including university, must focus on “deeper learning,” which means learning that will “transfer” to

new situations. The authors make a number of recommendations about how to achieve “teaching for transfer,” including the following:

- Teaching should be done in a systematic fashion, with learning goals that are clearly defined. Results of research indicate that “learning for transfer requires knowledge that is mentally organized, understanding of the broad principles of the knowledge, and skills for using this knowledge to solve problems” (p. 4-25).
- Students need ample opportunity to practice new knowledge and skills. Learning is much less likely to “stick” without sustained practice.
- Formative assessments of student work appear to be helpful. These are assessments which occur *during* the learning process, providing ample feedback, and allowing for revisions of student work before the work is considered “final.”
- Efforts should be made to teach students that individual characteristics relevant to learning (e.g., cognitive ability, persistence, general work ethic, motivation) are at least partially teachable and malleable. Students who believe that they can change their own characteristics can perform better than students who do not hold this belief (e.g., Yeager & Walton, 2011).
- College professors will need to be taught how to integrate new teaching principles into their teaching. This will require faculty development work and adequate time for the college professors to receive training.
- At this point it is difficult to determine if teaching for transfer is domain/discipline specific or is interdisciplinary. Private funders and the government should fund research to investigate this issue further.

The report authors caution that the recommendations above are based primarily upon research which has been conducted on competencies in the cognitive domain. Although they believe that these recommendations may apply to interpersonal competencies, research is required to confirm this. The authors make the following recommendation which applies to CTL competencies (using their vocabulary, “interpersonal competencies”):

- Researchers need to develop clear, valid ways of assessing CTL competencies in students, both formative and summative assessments. The lack of reliable, valid, and fair measurement devices has led to a limitation of useful research regarding how to effectively teach or learn CTL. A publication from the National Research Council (2001) provides recommendations regarding what constitutes an evidence-based assessment.

### **Research and Findings**

Our CTL research at CSUEB involved three components: a) a survey of employers who participated in job fairs on campus during October 2012, February 2013, or April 2013; 2) an online survey of CSUEB students; and 3) a survey of the CSUEB 2011-2012 course catalog.

#### **Employer Survey**

Employer surveys were distributed to job fair participants by one of the researchers or an AACE employee. Job fair participants were asked to complete the survey at their convenience and return the survey to the researcher either at the completion of the job fair, in person, or through using a pre-addressed, stamped envelope addressed to one of the researchers. The employer survey was a three-page hard-copy questionnaire which asked the employers to evaluate the importance of ability to collaborate, teamwork ability, and leadership ability in their employees and which also included demographic questions. The assessment of CTL included

both overall questions about CTL (e.g., “How important is the ability to collaborate when you consider hiring college graduates”) and questions about specific features of or skills involved in collaboration, teamwork, and/or leadership (e.g., “Rate the importance of the following competencies for success in your organization: the ability to actively listen”). The respondents rated items on a scale of one to five (where one equals not at all important and five equals very important). The survey also included open-ended questions. Numeric results of the employer survey are presented in Table 1.

**Table 1**  
***Results of Employer Survey: Mean Scores and Standard Deviations (SD) for Survey Questions***

<b>Survey Question</b>	<b>Mean</b>	<b>SD</b>
1. How important is <i>the ability to collaborate</i> when you consider hiring college graduates?	4.63	0.55
2. How important is <i>teamwork ability</i> when you consider hiring college graduates?	4.85	0.46
3. How important is <i>leadership ability</i> when you consider hiring college graduates	4.56	0.67
4. Rate the importance of the following competencies for success in your organization		
i. Understanding the ways that cultural, gender and other differences can affect team dynamics.	4.23	1.03
ii. Collaborating within diverse groups with patience, objectivity, respect, inclusivity, and equity.	4.80	0.50
iii. Crafting consensus when presented with differing values, perspectives and priorities.	4.40	0.76
iv. Identifying, mitigating, and resolving conflicts.	4.64	0.49
v. Understanding team member roles and responsibilities.	4.52	0.71
vi. Applying the key elements of leadership, including fair allocation of work and rewards.	4.38	0.82
vii. The ability to participate in team decision-making and creative group brainstorming.	4.52	0.71
viii. The ability to actively listen.	4.96	0.20
ix. The ability to give and receive constructive feedback.	4.80	0.41
x. Being sensitive to and appreciative of the views of others.	4.68	0.56
xi. Being comfortable in diverse social and professional settings.	4.60	0.58

xii. Being aware of one’s own perspectives and biases.	4.64	0.64
xiii. Understanding the implications of values and ethics for leadership, teamwork and collaboration.	4.80	0.41
xiv. Leading diverse groups with patience, objectivity, respect, inclusivity, and equity.	4.64	0.57
xv. The abilities to identify strengths of team members and nurture these strengths in service of group goals.	4.24	1.13

**Notes:**

Scale for items 1-4 is as follows: 1= not at all important; 3 = moderately important; 5 = very important

n = 27

**Demographics of the sample:**

Type of Business: Private company or publicly traded company (33.3%), Non-profit organization (11.1%), Government agency or municipality (25.9%) , School, school district, college, or university (18.5%), Other (7.4%), Missing (3.7%).

Approximate number of employees: Range = 29 to 50,000; Mean = 4631.

Is your company primarily: Bay Area based (48.1%), Regional or statewide (11.1%), National (29.6%), International (14.7%), Missing (3.7%); (Two employers selected more than one option).

Have you hired students from CSU East Bay? Yes (66.7%), No (18.5%), Missing (14.7%).

Do you accept interns from CSU East Bay? Yes (55.6%), No (33.3%), Missing (11/1%).

Gender: Male (37.0%), Female 51.9%), Missing (11.1%).

Age: Range = 30 to 70; Mean = 39.4

Results indicate that employers rate collaboration, teamwork, and leadership as very important competencies for their employees; each item on the questionnaire was rated higher than “four” on a scale of one to five (where one indicates not at all important, three indicates moderately important, and five indicates very important). Open-ended survey responses, described below, also reveal the importance that employers place on CTL skills and provide a vivid, real-world picture of the ways in which they are actually applied in the workplace.

**Qualitative Survey Responses: Collaboration**

In response to the following question, “Which collaboration skills would you most like to see in college graduates?” the skills most frequently cited were good oral and written communication, strong interpersonal skills, the ability to manage conflict, valuing and respecting

the different cultures and opinions of others, professionalism, problem solving, and global thinking. Additional collaboration skills cited more than once were negotiation, giving and receiving constructive feedback, flexibility and follow-through.

In response to the following, “Describe... under what circumstances employees in your organization need to collaborate,” the most frequent responses were program development, special projects, in support of the organization's mission and goals, for product development, process improvement, making decisions under pressure, addressing client concerns, working in client communities, thinking of new ideas, and using technology such as WebEx or screen sharing.

#### **Qualitative Survey Responses: Teamwork**

In response to the following question, “Which teamwork skills would you most like to see in college graduates?” the skills most frequently cited were operating as a part of many teams, adaptability, working with others' ideas, clearly communicating, and listening. In response to the following, “Describe... under what circumstances employees in your organization work in teams,” the most frequent responses were: acting quickly and effectively in the client's best interest, intervening in a crisis, to support communities, to establish rapport, to work with other viewpoints and diverse groups, serve customers, work on multiple roles concurrently, mentor students, and facilitate the classroom.

#### **Qualitative Survey Responses: Leadership**

In response to the following question, “Which leaderships skills would you most like to see in college graduates?” the skills most frequently cited were: leading by example, high personal accountability, conflict and problem resolution, high integrity, persuasiveness, persistence, follow through, effective communication, organization, and confidence.

In response to the following, “Describe... under what circumstances employees in your organization use leadership abilities,” the most frequent responses were: able to take constructive criticism from their manager, positive and hard-working, meet the needs of the community, employees need to portray themselves as leaders, "step up" when needed, work on multiple teams, course correct, direct, and create a positive work environment.

### **Survey Responses: General Comments**

The survey concluded with a section which asked respondents to provide any general comments that they may have. General comments included the following, which focused on internship/work experience prior to employment, CTL skills and attitudes, communication, and general job skills:

There is an advantage to have (sic.) people who have a broad world view and have had internships; Would like to see that students have had hands-on experience; Field experience/internships - it brings confidence about their field; Students should spend more time working on practical team assignments working with businesses; Leadership experience at school or job is important; We want employees that are focused on improving the group as a whole - not just themselves; Communication and working with a highly diverse group of people is critical; Good oral and written communication skills are critical and collaboration is critical to a global economy; Students need political savvy and need to get job done with high quality; Candidates need to know how to write a resume and know what they want in a career before interviewing; Many seem to lack the self-esteem for a quick interview; Suggest a mixer without alcohol before the fair to get to know students - students need to know how to make the first move to approach an employer; Students need knowledge of collaboration tools (technology - Webex); Some students lack the ability to multi-task.

## **Interpretation of Employer Survey Results**

A few themes emerge from the employer survey results. First, employers are reporting that they value all CTL competencies assessed in the survey. Both general communication skills and listening are rated relatively highly in the numeric results and are mentioned frequently in the qualitative data. Additionally, valuing and respecting diverse cultures and opinions is mentioned frequently. In general, collaboration and teamwork skills are valued more highly than are leadership skills. In summary, employers highly value the multi-dimensional ways that employees get work accomplished through working together and also value employees' leadership behaviors whether or not in a formal leadership position.

## **Student Survey**

One of the researchers emailed the online survey link to CSUEB students in the winter quarter of 2013. The survey software used was Qualtrix. The survey was managed through the Office of Planning and Institutional Research on campus since the faculty researchers did not have access to Qualtrix software. The survey link was sent to 2940 CSUEB students (588 freshmen, 588 sophomores, 588 juniors, 588 seniors, and 588 graduate students), which represented 17% of the total CSUEB student body in winter 2013. A total of 877 (29.2 %) of the 2940 started the survey and 690 (23.5%) of the 2940 completed the survey. Among those who completed the survey, 78 (11.4%) skipped one or more questions on the survey. The survey asked respondents to estimate how frequently they were exposed to CTL and related experiences in classes and co-curricular activities, amount of their involvement in co-curricular activities, identification of CSUEB courses in which they were exposed to CTL, and their assessment of the degree to which their CTL experiences at CSUEB prepare them for the workforce and contribute to their personal growth. Results of the student survey are presented in Table 2.

**Table 2*****Results of Student Survey: Percentages and Means for Survey Questions***

1. Please indicate the percentage (%) of courses which involved learning about or the course work required:

	<u>Percentage</u>
a. Group work	50.55
b. Leadership	46.96
c. Teamwork/ collaboration	55.29
d. Applying teamwork and leadership skills in a real-life setting	50.93
e. The influence of diversity (culture, race, gender, or age) upon group behavior	55.78
f. Identification and resolution of conflicts within groups	46.42
g. Collaboration and creative group brainstorming	53.36
h. Respecting the views of others in group settings	65.05
i. Importance of integrity and ethics when interacting in a group	62.72

2. Have you been involved in any of these co-curricular activities.

	<u>Mean</u>
a. Student Government/ASI	1.19
b. Academic clubs	1.30
c. Cultural clubs	1.28
d. Greek organization (Fraternity/Sorority)	1.17
e. Recreational clubs	1.22
f. Religious clubs	1.12
g. Special interest clubs (orientation team, FYE, peer advocates, etc.)	1.20
h. Attending intercollegiate athletic events	1.32
i. Attending campus entertainment events, such as comedy shows, dance performances, etc.	1.52
j. Attending campus intellectual events out of the classroom, such as seminars, special lecture events, etc.	1.55
k. Recreation and Wellness Center programs and events (RAW)	1.65

3. To what extent do the following aspects at CSU East Bay prepare you to enter the workforce as an effective leader:

a. course work	3.46
b. co-curricular activities	3.29

4. To what extent do the following aspects at CSU East Bay prepare you to enter the workforce as an effective team member:

a. course work	3.80
b. co-curricular activities	3.44

5. Your personal growth since entering CSU East Bay can be attributed to many factors some of which may NOT be related to your experiences at this college.

PERSONAL GROWTH: Indicate the extent of your personal growth since entering this college (regardless of the college's contribution to that growth).

COLLEGE CONTRIBUTION: Indicate the extent of the college's contribution (i.e., your college experience both in and out of class) to your growth.

- |  |      |
|--|------|
| a. Personal growth in regard to becoming an effective leader                       | 4.01 |
| b. personal growth in regard to becoming an effective team member                  | 4.07 |
| c. college's contribution to growth in regard to becoming an effective leader      | 3.58 |
| d. college's contribution to growth in regard to becoming an effective team member | 3.69 |

**Notes:**

n for all items ranges from 612 to 687

For question #2, the choices were: Never (1), Occasionally (2), Often (3)

For questions #3, #4, and #5, 1 = none, 3 = moderate, 5 = very much

**Demographics of the sample:**

Gender: 27.8% male; 62.7% female; 1.3% other or decline to state; 8.2% missing.

Age: Range = 15 to 63; Mean = 25.68.

College Major: Many

Current class standing: 18.9% freshman; 15.3% sophomore; 16.7% junior; 19.4% senior; 20.9% graduate student; 0.9% open university; 7.9% missing.

Class standing when first enrolled at CSUEB: 42.7% freshman; 4.9% sophomore; 24.3% junior; 2.3% senior; 15.1% graduate student; 2.3% open university; 8.3% missing.

Hispanic/Latino ethnicity? 68.5% no; 22.9% yes; 8.6% missing.

Race: 0.3% American Indian or Alaskan Native; 29.7% Asian or Pacific Islander; 10.6% Black; 23.2% White; 11.3% Multiracial; 13.7% Other or Race Unknown; 11.1% missing.

Citizenship and Residency: 77.1% US citizen-in state student; 1.8% US citizen-out of state student; 4.8% resident alien/immigrant; 7.7% non-resident alien/nonimmigrant; 8.6% missing.

In which language do you communicate best? 81.5% English; 1.3% Spanish; 6.6% An Asian language; 2.4% other; 8.2% missing.

**Summary of Student Survey Results**

Results indicate that students are exposed to CTL experiences or instruction and/or group activities frequently in their coursework; students are reporting at least one of these types of experiences in about 50% of courses. Participation in co-curricular activities is generally low. Students report that coursework prepares them to be effective as both a team member and a

leader; students further report that coursework contributes more to their team member and leader effectiveness than does participation in co-curricular activities. Students claim personal growth in both team member and leader effectiveness over the time that they have attended CSUEB. They attribute a portion of both types of personal growth to their experiences at CSUEB. In sum, the university appears to be doing a good job of exposing students to CTL and group activities in courses and students perceive that the classroom experiences are at least moderately effective in preparing them as team members and leaders. Further study of CSUEB co-curricular activities is needed to determine where and how CTL exposure exists in those activities, and whether the exposure is effective in teaching CTL competencies.

### **Course Catalog Survey**

The course catalog survey was conducted by one of the researchers using the CSUEB 2011-2012 catalog. The researcher searched each of the departments on campus separately, a total of 88 programs, scanning for the following words in course descriptions: “leadership,” “teamwork,” “collaboration,” and “group.” Table 3 illustrates the incidences of these key words in course descriptions. The courses are organized by college.

**Table 3**  
***Course Catalog Survey: Incidences of the Words “Leadership,” “Teamwork,” “Collaboration,” and “Group” in Courses, Organized by College.***

College	Leadership	Teamwork	Collaboration	Group
Science	2	4	0	20
Letters, Arts, & Social Sciences	9	5	6	62
Business &	2	6	1	3

Economics				
Education & Allies Studies	63	8	8	32
Library	0	0	0	0
*Other	0	0	0	5

\*Other includes programs not associated with a particular college such as General Studies.

Three items in the student survey began with the following stem, “Please list the course ID for one or more classes which involved learning about:” and each was completed by one of the following three expressions: “Group work,” “Leadership,” and “Collaboration/Teamwork”. Table 4 illustrates the number of different courses which students reported as involving group work, leadership, or collaboration/teamwork, organized by college. When comparing the student course feedback to the course catalog survey, it is clear that students are experiencing CTL or group activities in many courses which do not include any of these key terms in their course catalog description.

**Table 4**  
*Student Survey Responses: Number of Courses Reported by Students*

College	Leadership	Teamwork/Collaboration	Group
Science	50	71	51
Letters, Arts & Social Sciences	86	105	113

Business & Economics	10	41	26
Education & Allied Studies	39	50	40
Library	0	0	0
*Other	12	13	15

\*Other includes programs not associated with a particular college such as General Studies

### **Recommendations for Practice**

Our external literature review and our own on-campus research involving students and employers reveals that CTL competencies are highly valued and that educators, students, and employers all agree that learning CTL competencies is a necessary part of a college education. Our student survey revealed that students are frequently exposed to CTL experiences in courses at CSUEB and that students feel that they benefit from these exposures.

As reported in *Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century* (National Research Council, 2012), the evidence that CTL competencies (which they call “interpersonal” competencies) are taught effectively in universities is scant because fair, reliable, and valid measures of these competencies are unavailable for most college teaching. They recommend that researchers commit themselves to creating fair, reliable, and valid measurement devices. CSUEB research funds could be devoted to the development of measures of CTL competency.

The authors of the report also make a number of recommendations for teaching any type of knowledge or skill, although they caution that the evidence that these recommendations are effective come primarily from research on cognitive competencies. We listed a number of

recommendations earlier in the report (pp. 8 & 9); a number of the recommendations are worth repeating here:

- Allow opportunities for sustained practice of the competencies. Here at CSUEB we appear to be exposing our students to CTL experiences frequently in classes, and thus are allowing for “sustained practice.” Future research on campus could investigate more about *how* we are exposing our students to CTL in classes as a part of assessing our effectiveness in teaching CTL.
- In classes, do formative assessments of student work in CTL. Formative assessments are assessments that occur during the learning process, in which teachers provide detailed feedback of student work and allow students to revise the work before the final product is submitted for a grade.
- Encourage students to believe that their personal qualities are potentially malleable, since evidence reveals that individuals who think this way perform better on cognitive tasks (Yeager & Walton, 2011). This message of malleability could be communicated to students by their professors and by personnel in the Student Center for Academic Achievement, in Accessibility Services, and in Academic Advising and Career Education. For instance, some people believe that there are “born leaders,” but evidence indicates that leadership qualities can develop in individuals.
- The university should support the Office of Faculty Development for training professors in teaching methods that may not be well known (e.g., formative assessments, the importance of sustained practice, and AAC&U high impact practice to develop teamwork through group work).
- We, the researchers, intend to disseminate our results and recommendations through presentations on campus, such as “Back to the Bay,” and off campus.

While further research is conducted on CTL to determine the most effective teaching methods, other resources are available. Griffith University has created a 43-page Teamwork Skills Toolkit, with practical “how to” advice, available at [http://www.griffith.edu.au/\\_data/assets/pdf\\_file/0006/162726/teamwork.pdf](http://www.griffith.edu.au/_data/assets/pdf_file/0006/162726/teamwork.pdf). The National Clearinghouse for Leadership Programs produced a helpful report on leadership development available at <http://nclp.umd.edu/include/pdfs/MSLReport-FINAL.pdf>.

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# **Using Social Media as a Tool to Drive Collaboration, Enhance Critical Reflection and Engender Improved Socialization Outcomes in Enterprise Learning**

**Topic Area:** Business Education

**Presentation Format:** Paper Session

**Presentation Description:** Research paper on the use of social media tools to enhance student-learning experiences in dynamic enterprise-learning environments. Findings indicate that pedagogical transformations can be achieved by carefully designed approaches to engaging social media in facilitating greater collaboration, critical reflection and enhanced student socialization.

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# **Using Social Media as a Tool to Drive Collaboration, Enhance Critical Reflection and Engender Improved Socialization Outcomes in Enterprise Learning**

## **Introduction**

This paper examines the use of social media tools, in particular the enterprise-level social platform 'Yammer', and 'YouTube' in fast tracking the democratization of commercial innovations as part of a collaborative enterprise learning program. The program is called the Innovation Fastrack Program or IFP; it has sought to offer students real life experiences in conceptualizing, prototyping and commercializing innovations in collaboration with industry partners that range from multi-billion dollar global retail firms, to world renowned professional services firms to not-for-profit organisations engaged in mobilizing social capital in realizing more equitable and just community outcomes. The program has been running since 2007 and in that time 165 students have graduated from the program with enhanced (and highly practical) skills focusing on creativity, design thinking, rapid prototyping, business model development, client reporting and presentation as well as life skills concerning communication, critical analysis and reflection, emotional intelligence and ability to understand and develop group dynamics.

Given the innovative nature of the program, it has been essential to continually evolve both content aspects and delivery modes as each innovation presents unique problems, opportunities and resource requirements. This has required academic staff and industry partners to strive to manage the tension between high levels of uncertainty and nascent student capabilities through immersion in real world conditions supported by high level mentoring and coaching. Many of the innovations the teams have worked on have been digital product and service offerings e.g. on-line idea capturing and assessing portals, data visualization dashboards for senior executives or mobile phone apps used to track tax liabilities for 'off-boarding' international executives. Given the propensity for industry to seek our assistance in driving their digital commerce it has required academic staff to engage with social media tools to align with the nature of the innovations and to also innovate around pedagogy in delivering and assessing enterprise learning programs

such as the IFP that by and large sit outside mainstream business studies; akin to what Gibb (2002) calls 'creative destruction' of the way we have been endeavouring to 'teach' entrepreneurship and innovation. This paper presents research from data gathered over six years regarding the efficacy of social media platforms at an enterprise level in fostering collaboration and knowledge spill-overs between Higher Education students enrolled in undergraduate and postgraduate business degrees, academic staff and industry participants and their key stakeholders (e.g. customers, suppliers, distributors, business partners).

### **Research Problem**

High levels of uncertainty, ambiguity and at times, volatility characterize the IFP. Thus, learning contexts need to be able to facilitate rapid and symmetrical access and development of knowledge. The life cycle of delivery and development is far from linear, being iterative and at times dense and at other times loose and free form. A traditional approach to workshopping the conceptualization, problem-solving, prototyping and commercial delivery of innovations is not entirely effective as a stand-alone approach (this was trialled in the first year of the program). A more composite or blended approach to facilitating capability development is required. Moreover, as Gilbert (2012) notes, overcoming one of the major constraints of enterprise learning, i.e. 'differing stakeholder perspectives and evolving outcomes' is not easy and assessing student learning outcomes in a program like the IFP can be problematic. These identified challenges are further exacerbated by the fact that the university involved has a high percentage of international students in its programs and in such a dynamic context as the IFP, innovative ways must be developed to ensure that they are socialized into the program quickly and effectively. Hence in regard to student overall learning experience we have three complex issues that this research addresses:

1. Research Problem - Does the use of an enterprise social network platform like Yammer, enhance collaboration amongst IFP participants?
2. Research Problem - How can social media be used in the IFP, to facilitate better critical reflection by student participants?

3. Research Problem - Can social media be used as a tool to achieve better socialization outcomes for students?

### **Literature Review**

Grosbeck (2009) provides a useful dissection of the use of web technologies in Higher Education, listing both the pros and cons for academics. Much of this insight is based on web 2.0 technology and it is obvious that at the cusp of web 3.0 there can be found a good measure of fear and a tendency on the part of many universities to avoid risk in engaging with such technologies, often citing security as a major constraint. Yet this overlooks the fact that access to and proprietary of data continues to evolve rapidly and if we raise the ramparts then it is obvious that innovation will be stifled. This innate fear of being compromised is somewhat falsely founded given as social media technology becomes more omnipresent and accepted so too security capability around many of these platforms improves. Data security cannot be totally ensured however closed channels and enterprise boundaries around platforms along with careful administration regarding content and participants can go along way to overcoming the constraints oft cited. As Grosbeck notes (2009:482), “teachers should look up from their textbooks...the reason these social technologies work is because teachers can foster collaborative work not only among their own students, but with colleagues and community members from around the world”.

Constructivist learning appears to have become an area of concerted focus in Higher Education. McLoughlin and Lee (2008) propose that didactic models of teaching and learning are out-dated and need rethinking. Furthermore they note a movement away from instructor-centred ‘positivist’ approaches to more constructivist models characterized by collaborative learning communities, user-created content and personalisation of learning approaches. Knowledge can no longer be seen to be exclusive and protected rather it is consumed and created often by collectives that offer different perspectives than that of unilaterally delivered knowledge. As McLoughlin and Lee (2008) note new learner-centred pedagogy are subject to rapid change and to differences based on discipline area though at a mezzanine level, learner-centred pedagogy is likely to be characterized by the following:

- digital competencies that focus on creativity and performance;
- strategies for meta-learning, including learner-designed learning;
- inductive and creative modes of reasoning and problem-solving;
- learner-driven content creation and collaborative knowledge-building;
- horizontal (peer-to-peer) learning and contribution to communities of learning, e.g. through social tagging, collaborative editing and peer review.

Gray et al (2012) also refer to the synergistic nature of collective learning and the leverage that web-based pedagogies may afford educators in terms of content and communication. They also detail that there appears to be little empirical work in regards to summative assessment whilst noting a greater proliferation of efforts in regard to formative assessment. They observe that this may be due to academics remaining reticent in revealing their use of novel approaches that may challenge institutional values and policies. In particular the issues of academic integrity and IP ownership comes to the fore continually.

Engagement Theory originally developed by Kearsley and Shneiderman (1999) has been used as a theoretical lens by some researchers to test the emergence of factors significant in identifying issues critical to collective, problem-based learning. It is predicated upon three core components, 'Relating, Creating and Donating'. Hazari, North and Moreland (2009) developed a four-factor model underpinned by Engagement Theory that sought to measure the pedagogical value of wikis for user-centered business school education. Four constructs based on a literature review were developed, 'Overall Learning', 'Motivation', 'Group Interaction' and 'Technology'. Their results indicate that the scale was reliable and valid (Cronbach alphas ranged from 0.85-0.93) with overall scale reliability at 0.97, though such a high result needs to be treated with some caution as it could indicate that some of the measurement items measure the same thing or that over-measurement has occurred. Notwithstanding this, the scale reflects many of the findings in the IFP over the past six years as detailed by Gilbert (2012) except for 'Technology', as a wiki was used whereas Gilbert operationalized both Yammer and YouTube, the former to drive collaboration

in democratizing innovation and assisting in the socialization process of international students and the latter in formatively assessing critical reflection by student participants in the IFP. Hazari, North and Moreland (2009) note that their research was confined to the use of a wiki and with business students and called for further research to explore for example social networking and student learning and motivation.

As previously discussed, Gilbert (2012) identified 'differing stakeholder perspectives and evolving outcomes' along with 'variability in student experience' and 'level of industry partner engagement' as critical issues that must be addressed in designing and implementing a successful enterprise learning program. In regard to stakeholder perspectives we have observed that industry are not overly concerned with assessment, they are more focussed on commercial outcomes and see assessment as an aside to be accommodated if the assessment aligns with their objectives. This is somewhat more easy to achieve when evaluating presentations and reports but more difficult in gauging the impact of content and delivery on student learning outcomes. In particular, assessing how and to what extent students critically reflect on their learning.

Crisp (2012) further articulates the movement from positivism to collectivism going further to posit that in recent times a neuroscience approach has been adopted by educators wishing to embrace more dynamic and interactive learning and subsequent assessment approaches. He maintains that assessment is critical in determining an appropriate approach towards student learning. He categorizes approaches into 'convergent' or 'divergent' pedagogy, where convergent expects students to provide the same response and divergent where 'students may provide different but equally valued responses' (2012:6). The former often adopts standardized feedback in assessing core knowledge whilst the latter requires more innovative approaches to determine the 'relative worth' of students' functional and procedural knowledge. As previously observed, researchers have noted the paucity in summative approaches to assessment with a greater preference for formative assessment when web-based learning environments are engaged. Through continual re-design of the IFP resulting from additional learning that each program offers (to all stakeholders) an integrative approach to

assessment has emerged that overcomes the variance in expectations between academic and industry. This approach essentially addresses the six key characteristics that Crisp (2012:8) maintains promote student learning in terms of self-direction, problem-solving capabilities and adaption of learning to future scenarios as follows:

1. students are provided with opportunities to make judgements about their own learning or performance through review and critique;
2. students are provided with opportunities to define standards and expectations in their response;
3. students are provided with opportunities to track and analyse their approaches to responding to a problem, issue, situation or performance;
4. students are provided with opportunities to integrate prior or current feedback into their response;
5. students are provided with opportunities to engage with a meaningful task that has inherent worth beyond just an assessment activity;
6. students are rewarded for the quality of their analysis of metacognitive abilities, rather than declarative knowledge.

An additional challenge in designing enterprise-learning programs that deal with real world problems and opportunities is how to better socialize students into such a program; particularly international students so that their experiences are equally as positive as their domestic counterparts? Higher Educational institutions around the world are well aware of the global nature of the education industry. Many institutions aggressively market their programs particularly in Asia and the institution offering the IFP is no different, indeed if both onshore and offshore students were aggregated then just over half of the College of Business's 30,000 students are international. So it is not surprising that international students apply to participate in the IFP and in upholding fair and equitable access to all, careful and measured attention must be brought to bear on ensuring that international students prosper and that the domestic students who work together with them do not suffer as a consequence of a poorly designed program. Sümer, Poyrazil and Grahame (2008) note that in the United States there are over 600,000 international

students with over 58% coming from Asian countries. Given that most university students are challenged by both the content and workload of their degrees it is to be expected that they will suffer stress. This is compounded for international students who must deal with culture shock and issues such as language barriers, social adjustment, homesickness, immigration requirements and loneliness and isolation. This of course can impact on their ability to perform, moreover the potential for them to suffer more intensely due to the nature of the IFP and the need to become comfortable with uncertainty and ambiguity is compounded. Trice (2004) calls for educators to 'mix it up' as research shows that international students better able to socialize both within their studies and outside their studies with students of other nationalities perform better and have a richer university experience. She also found that the ability to communicate effectively was a strong predictor of a better social experience.

According to Gardiner (1994), the critical components and competencies that educational institutions provide students to face society should include:

- capacities for critical thinking and complex problem solving;
- respect for people different from oneself;
- principled ethical behaviour;
- life-long learning and
- effective interpersonal interaction and teamwork.

Tham and Werner (2005) note that on-line learning environments can if carefully designed facilitate more positive outcomes for international students in regard to Gardiner's competencies, as the on-line environment is less threatening and the terms of engagement more self-directed. Gardner's 'critical components and competencies' align with the learning outcomes for the IFP and given the participation of international students in the program and the heightened socialization issues that thus present, YouTube has been effectively used to not only promote critical reflection by students but also to monitor international student experience in the program.

## Method

To measure overall student learning experience an adapted scale based on the work of Chickering and Gamson (1987) and O'Neill, Moore and McMullin (2005) has been developed. The scale measures items such as encouragement of active learning, reciprocity and co-operation amongst students, time and task, feedback, critical thinking and achievement of learning objectives. The scale has been used over the course of the IFP and has proven robust. Cronbach alphas assessing items to scale have ranged from 0.83 to 0.91 over the period of measurement. Convergent and discriminant reliability of items to scale show high correlation and sphericity using Bartlett's test, significant at the  $p < .001$  level. Similar testing has been undertaken for all scales used to measure student learning and satisfaction outcomes in the program over six years.

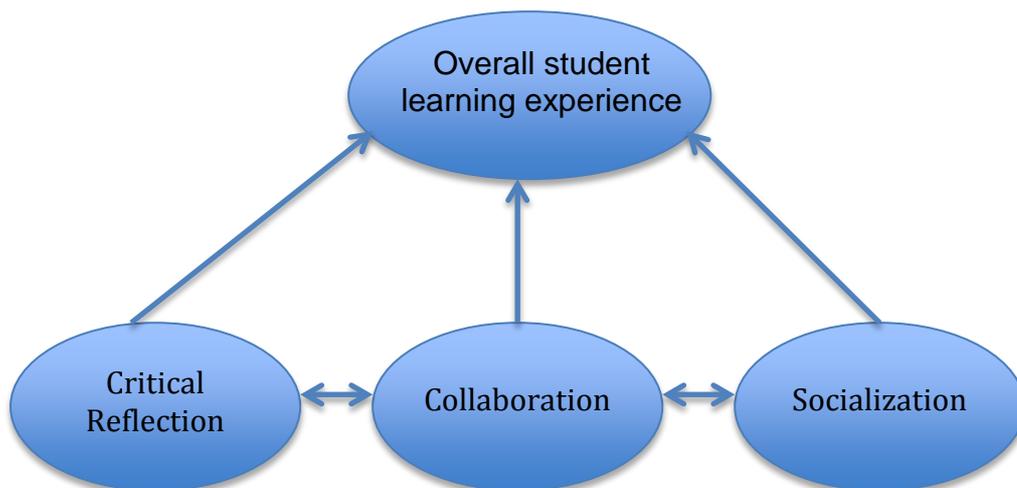
To investigate 'Research Problem 1 - Does the use of an enterprise social network platform like Yammer enhance collaboration amongst IFP participants?' - a Yammer feed is established for each Fastrack program. An overarching 'All Network' group is operated that includes all students, academics, industry partners and other key stakeholders depending on the nature of the innovation. Teams are then able to operate 'Private Groups' that consist of each team, their industry mentors and coaches as well as academic staff involved. The purpose of this is that for each innovation at least two teams are assigned to each innovation and provided with symmetrical information. This encourages divergent solutions to the opportunity and also a little friendly competition that does tend to enhance performance!<sup>1</sup> Collaboration is measured in two ways, firstly through Yammer Analytics that provide metrics and statistics in relation to members, groups, messages, files, pages and access. Secondly, students are surveyed to gather data relating to their experience in using Yammer. Measures relate to degree of engagement; quality of engagement; utility in accessing knowledge; equity in collaboration; ability to interact with mentors and coaches; knowledge dissemination; and overall experience in comparison to other courses that use Blackboard.

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<sup>1</sup> For an extensive overview of the IFP program see: David H. Gilbert, (2012) "From chalk and talk to walking the walk: Facilitating dynamic learning contexts for entrepreneurship students in fast-tracking innovations", Education + Training, Vol. 54 Iss: 2/3, pp.152 - 166.

To investigate 'Research Problem 2' - How can social media be used in the IFP, to facilitate better critical reflection by student participants? - A 'Reflection Journal' assessment requires students to post weekly YouTube diaries to their instructor over a private channel. The diaries are assessed using Crisp's (2012) Integrative Assessment criteria and students are also surveyed to measure their experience with the medium in relation to the following items: ease of use; time effectiveness; effectiveness in making judgements about their own learning or performance; ability to integrate prior or current feedback into their activities; ability to track and analyse their approaches to responding to a problem, issue, situation or performance; management of team dynamics; and performance and applicability of theory to practice.

To investigate 'Research Problem 3' - Can social media be used as a tool to achieve better socialization outcomes for students? - A combination of Yammer and YouTube is used to build a community, drive collaborative engagement and reduce stress experienced by all students, particularly international students in having to conceptualize and then support critical discussion relating to design-driven innovation. Outcomes are measured through Yammer Analytics and self-reported measures from surveying participants in the IFP.



**Figure 1: Conceptual Model**

## Findings

An exploratory factor analysis using principal component analysis with varimax rotation was conducted to test model ability to measure 'student learning experience'. The model explained 84.7% of the variance and provides an appropriate basis for further investigation into associations between the factors. Table 1 following presents measurement model results.

Factor/items	Mean Score (1-5)	Factor Loading	Scale Alpha
<b>Factor 1</b>			
Overall Student Learning Experience			
1. Active learning	4.35	.887	.91
2. Reciprocity	4.77	.798	
3. Time & task	3.98	.712	
4. Feedback	4.92	.914	
5. Critical thinking	4.90	.898	
6. Learning objectives	4.94	.910	
<b>Factor 2</b>			
Collaboration			
1. Degree of engagement	4.65	.915	.89
2. Ease of access	4.11	.862	
3. Utility	4.50	.798	
4. Knowledge dissemination	4.91	.756	
5. Level of mentor interaction	4.05	.815	
6. Level of team engagement	4.22	.799	
7. Equity in effort	3.87	.705	
8. Blackboard Comparison	4.89	.825	
<b>Factor 3</b>			
Critical Reflection			
1. Ease of use	4.76	.768	.90
2. Time	4.25	.790	
3. Learning/performance judgement	4.33	.935	
4. Feedback integration	4.60	.908	
5. Problem-solving analysis & tracking	4.57	.836	
6. Team dynamics	3.98	.756	
7. Applicability between	3.15	.776	

theory & practice			
<b>Factor 4</b>			
Socialization			
1. Access	3.96	.729	.83
2. Convenience	4.11	.810	
3. Self-direction	4.53	.709	
4. Degree of loneliness	4.21	.822	
5. Identity & belonging	4.88	.836	
6. On-line community support	4.92	.825	
7. Communication proficiency	3.45	.716	

**Table 1: Rotated Component Results**

The factor analysis results as detailed were analysed in conjunction with Yammer analytics, which offer statistics around a number of metrics. This includes number of members, number of groups, number of both network and private messages, number of files uploaded and exchanged and growth in member engagement. In the IFP use of both Yammer and YouTube is voluntary and alternate 'traditional' communication mediums are offered such as face-to-face weekly workshops and typed or hand-written critical reflection journals. 100% of students chose to use both Yammer and YouTube and statistics over the course of the program show strong trends in growth across all categories of metrics, from the beginning of the program to conclusion. The average member engagement over the IFP lifecycle has been 100% and the growth in overall member engagement 19.2%. Moreover, when international student statistics are compared to domestic students two interesting trends have emerged, Firstly, at the beginning of the program international students are slower to become engaged, indeed many remain almost unengaged preferring to let a group 'spokesperson' drive team traffic. This individual is usually the most proficient in English and often the most confident in interacting. Secondly, when overall engagement is compared at the end of the program, the growth rate for international students is trending at 6.7% higher than their domestic counterparts, though of course off a lower base to begin with. Yammer analytics provide a transparent means for academics to monitor levels of engagement and combined with interaction with students and

industry partners in various discussions and exchanges a more tangible means to facilitating and assessing the level of socialization of all students and particularly international students participating in enterprise learning program such as the IFP.

## **Discussion and Conclusions**

The 'overall student learning experience' model has been developed to compliment existing data collection in the Innovation Fastrack Program that measures the lifecycle of innovations from creation to substantiation to activation underpinned by a design thinking approach. The IFP has become well known with industry for producing especially digital innovations that drive greater business profitability. Significant outcomes for industry partners have been achieved in terms of new products and services, enhanced mentoring capabilities and exposure to fresh talent that offers a different perspective into what can be achieved. For students, the opportunity to be immersed in real-world problems and opportunities in collaboration with skilful industry partners, results in outcomes not possible in a traditional higher educational learning environment. For educators in the program, the strong focus on digital business model development and execution has necessitated innovation around pedagogy. We know business cycle times are ever diminishing and market reach is more often than not viewed in global terms, thus heightening uncertainty, ambiguity and volatility in business. Enterprise learning programs need to tackle these issues and it is difficult to do so in a simulated environment. That said, the duty of care to students is undeniable and as educators it is imperative to find ways to ensure that students are able to collaborate, socialize and reflect on their experiences in ways that facilitate these objectives whilst not placing them under unnecessary duress.

The use of Yammer has driven greater collaboration in the IFP, students have responded positively to the platform whilst industry partners (some of whom have not yet taken to Facebook or Twitter) have found the interaction dynamic, in real time and effective in engaging other external partners able to further enhance knowledge exchange. Industry partners are time poor, indeed students also face significant time pressures and as for academic staff, the increasing pressures to conduct research and publish results, bring in grant-

related income, supervise doctoral candidates and achieve excellent teaching outcomes means that innovation in the way we design and deliver learning programs is often constrained. Yet, we have found in the IFP that the use of social media such as Yammer and YouTube can be useful in enabling innovative methods of achieving greater collaboration amongst students in a self-directed mode facilitated by mentoring from both industry experts and academic staff. This creates a synergistic nexus between theory and practice with feedback loops regarding practice assisting students to contextualize their learning and theoretical feedback loops assisting industry to ground their practice offering additional supporting evidence for proposed courses of action.

The less threatening virtual environment also allows students to essentially self-manage their socialization into a community and one of the pleasing outcomes of our use of social media in the IFP has been the continuation of communities after the program has concluded; communities that are globally interconnected providing enterprise opportunities and support. International students in particular view this approach positively and speak highly of the IFP and the approaches taken to both facilitating their experiences and also leveraging their international perspectives and networks.

The success of YouTube in engendering greater critical reflection has been somewhat of a surprise. It was at first trialled as an experiment but soon became a critical component of the student learning experience. Students are more likely to reflect honestly and deeply on their own learning and ability to integrate feedback into their endeavours. Likewise, they are not shy in evaluating their team's performance (often in comparison to other teams) and it has been noted by academic staff involved in the IFP that a 3-5 minute weekly video affords a more valid and uncompromised view of each student's learning journey, than several pages of notes in a written diary that are often of a sanitized nature. This enables the corrugations in experience to be smoothed quickly and effectively and student trust increases as they see that any issues that do arise are managed professionally and expediently.

Further experimentation and innovation will occur in the IFP and we suspect that given the digitally driven nature of this enterprise-learning

program and the propensity for the Millennial generations to live their life constantly connected and engaged via technology, social software tools will become more central in the program's evolution. We have found that the tools we have used increase autonomy and levels of socialization and interactivity, while enabling user-controlled, peer-to-peer knowledge creation and network-based enquiry and problem solving. We must however be alert to not make the mistake of seeing technology as the driver of pedagogical innovation rather it is the tool to operationalize theory and research-driven transformations.

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# Bringing Practice and Theory together through Entrepreneurial Learning.

By

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The paper is based upon experiences from a Swedish Business School of educating in the area of Entrepreneurship. Starting from traditional class room teaching, a specific pedagogical concept “entrepreneurial learning” emerged. The paper discusses how interaction with partner organizations and local communities can be used on bachelor and master level.

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## *Abstract*

The School of Business and Economics at Linnaeus University, Växjö, has a long tradition with research and education in the area of Entrepreneurship. It started with a small business program where traditional class teaching was combined with internship at a company. Later this program developed to a bachelor alternative at the traditional Business Administration program focused on Entrepreneurship as a subject. Year 2000 the Business Development Study Program (EBD) started guided by a specific pedagogic idea of “Entrepreneurial Learning” based on earlier experiences of making close links between the local business environment and Higher Education.

The pedagogical idea “Entrepreneurial Learning” was formulated by Jonsson and Jonsson (2002) in a conference paper. The concept was influenced by the among others Freire (1997), Mentowski et al (2000), Rogers (1969) as well as the Växjö professor Bengt Johannisson. It has close connection to what has also been framed as Problem Based Learning (PBL) or Project Based Learning as well as Experiential Learning.

The EBD Bachelor Program is based upon some basic principles which are elaborated in the paper;

- Learning takes place in the space that is created between the students, the universities and a partner organization.
- Learning is stimulated by the investigation of themes.
- The learning process is steered through the formulation and design of tasks and examination forms.
- Learning is an ongoing process.

While the Bachelor Program has been running for more than ten years some initiatives has been taken to learn from non-academic entrepreneurship education (Johansson and Rosell, 2012). Currently a Master Program is being developed based upon the experiences from the EBD Program. Considering these experiences and research reports on PBL this paper discusses how to bring practice and theory together in advanced Higher Education in the area of Entrepreneurship. Specifically the paper discusses ways to create space to allow students to get close to practice, to spend long enough time in the field of practice in order to contribute to practice and to use the student’s earlier personal experiences in practice. Such encounters with practice require specific methodology training and coaching in order to make the projects successful. Finally we discussed how knowledge of practice can contribute in advancing theoretical knowledge as well as how theoretical knowledge can be used as an interpretative repertoire to understand practice.

Keywords: entrepreneurial learning, problem based learning, experiential learning

## Introduction and purpose

Entrepreneurship education is on the political agenda of most countries today. More and more entrepreneurship education is celebrated as a highway for future wealth creation (Johansson and Rosell, 2012, Stevenson and Lundström, 2005). In Europe the European Commission has long supported the cause of entrepreneurship education and there have been national strategies and action plans developed in most EU countries to integrate entrepreneurship throughout the whole school systems (Eurydice, 2012). The idea behind this massive trend reflects a strong discourse on that national and regional economies need new entrepreneurs (Taatala, 2010). The entrepreneurship discourse has by large favored a focus on the individual. In Ogbor's (2000) interpretation this discourse has created a myth about the entrepreneurial hero. As a consequence the underlying argument why society need entrepreneurship education is that the school system could foster upcoming generations to become (hero) entrepreneurs or at least more entrepreneurial in their behavior. It is seldom reflected upon the good and bad sides of this as it is presumed that entrepreneurship only makes the society better and wealthier (Berglund and Johansson, 2012). Entrepreneurs are assumed to do good not bad things to society.

As there are many views on what entrepreneurship is, there are also different views on what entrepreneurship education should accomplish. One main argument is that entrepreneurship education should develop entrepreneurial skills of the students, as this would result in more people with higher entrepreneurial capacity. However, academic education in general emphasizes theoretical knowledge, which means that abstract and generalizing thinking is promoted and practical training is less emphasized. In line with this there are many textbooks on entrepreneurship. The title of Kuratko (2008) is accordingly: "Entrepreneurship – Theory, Process, Practice". The publisher advertises the book in the following way:

Learn the true process of a successful entrepreneur with ENTREPRENEURSHIP: THEORY, PROCESS, AND PRACTICE, Eighth Edition! Presenting the most current thinking in this explosive field, this renowned entrepreneurship text provides a practical, step-by-step approach that makes learning easy. Using exercises and case presentations, you can apply your own ideas and develop useful entrepreneurial skills. Cases and examples found throughout the text present the new venture creations or corporate innovations that permeate the world economy today. This book will be your guide to understanding the entrepreneurial challenges of tomorrow.

What is promised is an integration of theory and practice. As most textbooks on entrepreneurship, Kuratko's book refers to an implicit assumption of the learning process. The book claims to define and present the knowledge content which is relevant in order to become a successful entrepreneur. The book first present theory - generalized knowledge about entrepreneurship divided into different themes. Following theory cases are presented as illustrations of the generalized knowledge. Through exercises the students are then guided to reflect upon the cases as well as themselves and through this process come up with a kind of roadmap or plan for how to become entrepreneurs themselves or how to understand and assess entrepreneurship processes.

Textbooks such as Kuratko's are well aligned be used to design academic education *about* (Taatala, 2010) entrepreneurship. Generalized knowledge (theory) presented in an abstract

way is just that – knowledge *about* entrepreneurship. The cases provide elaborated knowledge about entrepreneurship related to specific contexts. This knowledge content can be further elaborated in lectures and seminars as well as examined through oral or written exams. All course activities could be performed within the classroom, the students do not need to interact with someone outside the classroom setting. Despite this the idea is that given that a student learns about entrepreneurship this learning could be followed by a second step where knowledge is applied in real life. That is however not part of an entrepreneurship program *about* entrepreneurship.

Another alternative is to design academic education *for or in* entrepreneurship. Education *for* entrepreneurship as used by Taatila (2010) is an education preparing for a career in self-employment and education *in* entrepreneurship refers to management training for established entrepreneurs. Taatila argues that an education for entrepreneurship is based upon experiential learning or learning by doing. Such learning is an abductive process starting from real life situations. Seen this way “an entrepreneurial student constantly learns via real experiences and creates new personal knowledge by producing creative solutions that solve emerging problems” (p56). Being true to experiential learning would mean that a textbook in entrepreneurship could not be prescribed in advance, as is usually done in course syllabuses. All prescribed literature would at most be labeled reference literature, a menu of suggestions where it is up to the student to decide whether or not it is relevant in the process of experiential learning. Thus experiential learning contrasts education about entrepreneurship as presented above, the latter being in line with a deductive process.

Taatila provides four examples of how experiential learning or learning for or in entrepreneurship is used in academic settings. The first example is a four month post-graduate diploma course. The second example seems not to be a clear case of experiential learning. The third example relates to an undergraduate program where different parts seems to be more successful than others. The fourth example is a learning environment arranged outside the regular curriculum encouraging students to turn their hobbies into new business ventures.

We draw the following conclusions from the examples Taatila describes:

1. To be true to experiential learning seems not to be unproblematic.
2. Experiential learning are exceptions that proves the rule and appears in the margin of academic contexts.
3. Entrepreneurship education through experiential learning is exclusively focusing new venture creation.
4. There is no example illustrating in what way an entire bachelor and/or master programme is designed based upon experiential learning.
5. There is an emphasis on practice which leaves the question of the relevance of theoretical (general/abstract) knowledge unanswered.

To sum up the discussion so far, two types of entrepreneurship education at the academic level have been described. The first is education *about* entrepreneurship based upon deduction starting with generalized knowledge. In the following we will refer to this type as traditional entrepreneurship education. This type is distanced from practice and fall short of bringing theory and practice together as theory takes the superior position. The second type is education *for or in* entrepreneurship. This type is based upon abduction and appears in the margins of the academic context. As this type is distanced from theory in that it gives personal experience a superior position it is also falling short of bringing theory and practice together.

This conclusion raises the question if there is a way to bring practice and theory together in a more balanced way, where practice and theory has an even weight.

The purpose of the paper is therefore:

1. To present a pedagogy of entrepreneurship education which brings practice and theory together in a balanced way
2. To illustrate how entrepreneurship education could be designed on bachelor and master level based upon such pedagogy.

## **Method**

The paper is based upon experiences from the School of Business and Economics at the former Växjö University and now Linnaeus University. The school has a long tradition of research in entrepreneurship and has run different kinds of educational programs in the area. In the beginning there was a small business program combining traditional education with internship (students working weekly at a small company). Later this was developed into a bachelor alternative within the traditional Business Administration program. At this time the education was rather close to education *about* entrepreneurship, however successful. One of the versions of this program was ranked fourth in the world in a ranking 1997. The reason it was ranked so high is related to a close connection to the local business environment and strivings to combine academic theory and practical enterprising already at that time.

Against this background the Enterprising and Business Development Program (EBD) was launched the summer of year 2000. The idea was to use all experiences from earlier programs and to develop a more distinctive pedagogy where the students raise the questions and take responsibility for their own learning. A pedagogic idea was developed by a team of lecturers, which will be described in the following section of this paper.

The pedagogic idea is articulated in a conference paper written by Christer Jonsson and Thom Jonsson (2002) and their paper is the main source used to describe the pedagogy in the following section of this paper. Descriptions of and experiences from running the program have also been published in book chapters by Johansson and Rosell (2012) and Kans (2009). 2012 an internal quality assessment of the EBD program was undertaken and is a further source which the following section builds upon.

In 2012 a process was initiated with the intention to develop a master program of entrepreneurship. Currently a one year master program has been decided to start 2014 and the work to develop a two year master is ongoing. Documents from the planning process of the master programs are the main source of the section about the master programs together with the personal experiences of the authors. We authors of this paper has been involved in teaching on the EBD program for several years as well as involved in developing the master program.

## **The pedagogy of an entrepreneurship bachelor program and its design**

The team of lecturers who formed the EBD program formulated six basic principles of the program. Theoretically this team was informed by the works of entrepreneurship researchers as Hjorth and Johansson (1998), Johannisson and Madsén (1997), Stevenson and Jarillo

(1990), Hjorth (2001), Forslund (2002) and pedagogically by scholars as Rogers (1969) and Freire (1997). The six principles were:

*Learning is created in the room that occurs between the university – the student and the partner company.* The first week now starts with a bus trip starting at the university bringing the students to various potential partner organizations. The bus in itself symbolizes the “in-between space”. The idea with the bus trip is to communicate the idea that this in-between space is an open space – full of possibilities for the students to choose. From week two of the program, the students need to find a partner organization to work with, something they then has to stick with the rest of the program, with the possibility to change organizations over time. With this principle a setting is created where the students has to work with theory and practice at the same time.

*The learning process is steered through the formulation and design of task and examination forms.* In traditional education the literature governs what the students read and try to learn. In the EBD program the learning is governed by what the students are doing, the problems they want to solve. That is also the focus of the examination. There is a list of literature in the course syllabuses, but these are seen as a support system together with lectures and seminars. The examination forms are divided into two parts, projects related to the theme of the course and discipline related exams. This way a balance between examining the acquisition of theoretical and practical knowledge is created. The projects have to be formulated together with the partner organization in order to be of practical use for this organization. The projects are about solving practical problems by drawing from contextual information together with theoretical/generalized knowledge. Therefore the projects are assessed with pass and distinction, while discipline oriented exams only can give pass, as it is only the generalized knowledge which is assessed in these latter exams.

*Learning is something the student is responsible for.* The message to the students is that they are responsible for their learning – it is not the teacher and it is not the literature. To study is to learn how to learn. In this way experiential learning is encouraged, a learning which is expected to take place together with the partner organization, the teachers and by *using* theoretical knowledge. The students have to find their own ways of how to learn by focusing different aspects of enterprising and the teachers assist the students in this process.

*Learning is individual and individualised.* Part of the content in the courses is the same for all students, but parts are determined by the choices the students make. This means that the students to a large extent decide upon the content of their education. This content is related to their own interests and to the partner organization. If a partner organization for example is in the service industry, for example software programming, the student will have to learn a content related to that specific industry. This content is different compared to a student who work with a truck producer. Also the kind of projects that are formulated in a dialogue between the student and the partner organization will influence the content of the course for each student.

*Learning is a continuing process.* The program starts with an overview of the disciplines that builds up the program (the disciplines are Business, Economics, Law, Informatics and Social Psychology) and then through different themes encourages a deeper and deeper theoretical understanding parallel to solving practical problems of the partner organizations. On every theme most of the disciplines that build up the program are represented. Traditionally, progression in university education is secured through the pre-planned sequel of courses that

the student takes. Each course handles more complicated questions and phenomena. On the EBD program each discipline returns on every theme and add on to what has been discussed previously. Progression here is secured in the way that each discipline is related to a new theme. In this way, the student's ability to analyse and solve problems are enhanced gradually since the basic assumptions and models of each discipline is applied to new types of problems and questions.

*Learning is done through the investigation of themes.* The theoretical underpinnings of the program mean understanding entrepreneurship as a process, predominantly business processes and how they can be developed. This means the following themes are worked with: creating new businesses, administration of ongoing businesses, internal renewal, radical change processes and internationalization processes. In each of the themes the students meet relevant subthemes such as as law, economics, marketing, social psychology, etc. This way the students is trained to develop their abilities to solve the complex problems of their partner organizations.

During the first semester of the programme, the students are introduced to the academy and to the disciplines that build up the EBD programme. The concept of process is focused upon as each discipline is introduced from a process perspective. The students also start to interact with the community when they identify a partner organization and start to do project work in relation to this organization. In the project assignments, the students identify, describe and analyse processes in their partner organizations from the perspectives of the different disciplines.

The second semester of the first year introduces the first theme on the programme. This theme is related to the creative process of developing a new idea or product. The semester is based on entrepreneurship theory and focuses opportunity recognition and starting new ventures. In the beginning of the semester the students perform an environmental analysis from the perspective of their partner organization. Based upon the analysis they identify and formulate a development project. The last quarter of the semester this project is performed. During the second semester of the first year the discipline of social psychology has its own course (7,5 credits) labelled "the individual and the company". Here the student is asked to reflect upon his/her relation to the group and his/her development as an individual. The idea behind this is that the students are encouraged to reflect upon themselves as entrepreneurial selves, that is their own personality and their own thinking and acting in relation to the project assignments on the program are reflected upon.

The second year starts with the theme management and control of processes. This theme is worked with the entire third semester of the programme. During the semester students do in total seven project assignments. Each assignment is related to the partner organisation. The instructions are formulated by the university teachers. The students are asked to analyse and solve problems related to different aspects of management and control. One assignment focuses on human resource management, another deal with operations and process management, a third is about sustainability and so on. The students are asked to apply specific theories in each assignment. Within these limits, the students can however adapt the assignments so that they solve a problem that is relevant also to their partner organization. The theme finishes with an assignment where the students are asked to formulate a project plan for a development project in their partner organisation.

The fourth semester of the programme there is a return to renewal, change and development in organisations and thus to entrepreneurship theory. The project plan that was formulated in the end of the previous semester is developed into a project at the partner organisation. The

students also do an assignment where the history of the partner organization is documented. Theories about change in organizations are then used in order to interpret the development. The third year of the program focuses upon internationalization of organizations. The students do literature reviews on internationalization of businesses and they identify and perform a project assignment related to the international operations of their partner organisation. This semester, students have the option to go abroad and study courses at another university. The last semester of the program, the students write their bachelor thesis.

After twelve years the team of teachers working with the program have experienced opportunities as well as challenges. Starting with the challenges, in order to understand and solve a real life problem in an educational setting, knowledge from many disciplines has to be applied. There is a need for cooperation between staff that to some degree has their own way of thinking and working and thus belongs to different academic cultures. Adding to that, the EBD program is built upon a different pedagogical idea compared to other education programs at the school of Business and Economics at Linnaeus University. This makes it difficult for new teacher on the program to understand how she/he should contribute to each specific theme. There is a risk that the program is experienced as messy. There is consequently a great need of cooperation, dialogue and joint reflection between the groups of teachers involved in the programme. This could be experienced as time consuming compared to other types of programmes that does not cut across disciplines and faculties in the same way. Despite this, the EBD program has the same amount of resources as other programmes at the school of Business and Economics.

There are also opportunities. One reflection is that the pedagogic idea is useful in promoting some of the goals of higher education that other types of programmes might find difficult to reach. More specifically, the interdisciplinary aspect of the programme promotes a variety in methodological approaches and techniques, ranging from the more quantitative approaches of i.e. management control and logistics to the generally interpretative approach of social psychology. Additionally, the student's connection to both the university and to local organizations in the surrounding society makes it necessary for the students to at the same time handle many and different stakeholders in their education. The students have to discuss their education and their project assignments with actors outside the academy, in this case with representatives of local businesses and other types of organizations. This brings an extra dimension to the learning process, as practitioners may value their work according to different standards compared to the ones used in academia.

An internal quality assessment of the EBD program was undertaken in 2012, at a point in time when the program had been running for twelve years. The report states that the EBD program is unique in Sweden in the respect that it is the only coherent bachelor program for business students using a specific pedagogy for entrepreneurial learning, which means education for or in entrepreneurship. It is thus not an education *about* entrepreneurship, but an education which supports the students to develop their own entrepreneurial capacity (including characteristics like personal maturity, creativity, ability to act and self-confidence) parallel to the study of enterprising from different discipline perspectives.

At the start of the program the school arranged for partner organization in an effort to facilitate for the students. After some years it was decided it was the students who were responsible to recruit a partner organization. This message now is announced the first week of the program. During this week students also are encouraged to re-evaluate whether the program and its pedagogy really meets their own personal desires and fit with their personalities. Some students usually leave the program during this week or the first month.

The task to find a partner organization is a kind of challenge some students are not comfortable with. It has however not been difficult for students to find partner organizations and many companies in the region have been welcoming EBD students year after year. In 2012 a sample of partner organizations were interviewed. The respondents were in general very positive to be acting as a partner organization. They declared that it did not require very much preparatory work, they were satisfied with the contribution from the students and they appreciated the self-going character of the students. Sometimes the value for the companies were comparable to commercial consultants sometimes of lower value, but generally the students were considered to come up with sound and reasonable ideas for the problems they had worked with.

### **The pedagogy of an entrepreneurship master program and its design**

While the EBD program is unique in Sweden in being the only coherent bachelor program *for* or *in* entrepreneurship, there are a few others on the master level. Two of the existing programs specifically focus innovation and they are provided by technological universities. They therefore have a close connection to technological innovation and new venture creation. The Linnaeus University is a general university and the entrepreneurship tradition at the School of Business and Economics is broader. A key concept at the School is societal entrepreneurship (see Berglund, et al, 2012) which refers to entrepreneurship from a societal perspective, not least entrepreneurship taking place at the intersection between, the private, public and civic sectors of society.

The objective of the master program at the School of Business and Economics is to offer both one-year and two-year programs for entrepreneurship, which are based on the same pedagogic idea as the EBD bachelor program. The pedagogical principals are therefore the same but the structure of the program is somewhat different from the theme oriented design of the EBD program. In the following the two year master will be described. All courses are on advanced level.

The first semester are divided into two courses. The first half of the semester there is a course in business development. This course is to give a deepened theoretical understanding of business development processes. As such it is of the traditional kind, where theory is given superior emphasis. The second half of the semester has a course in action based methods and application. This course gives a thorough understanding of different action based methods, which includes a range of action research methods as well as other qualitative methods such as focus groups and participant observation methods. Philosophical foundations of action based methods are included in the course as well as problematization of action based research processes. During the course the students has to initiate a larger project for societal entrepreneurship. This could be a project concerning rural community development or a project involving different private or public organizations.

The first quarter of the second semester has a course on Scandinavian perspectives on entrepreneurship. This course gives a deepened theoretical understanding of entrepreneurship, emphasizing societal aspects of entrepreneurship. Half of the second semester the students work with the implementation of the initiated societal entrepreneurship project. Here the students need to interact with the partners involved and to take responsibility to acquire relevant knowledge in order to make a significant and useful contribution to the identified development objectives for the partners and other stakeholders. The last quarter of the

semester there is a methodological course about how to analyze the project so that the knowledge created can contribute to generalized, theoretical knowledge.

The first half of the second year is for studies at a foreign university. Here the students are encouraged to choose universities with whom the School of Business has a close cooperation. During this semester the students will take theoretical courses aiming at deepening theoretical knowledge in the area of entrepreneurship and to make project work with partner organizations in the this foreign context. The second half of the second year is for thesis work. The student can use the projects they have undertaken as empirical material for their thesis. There students can choose either to align their thesis for work outside the academy or they can prepare for PhD education.

When comparing the master and the bachelor program the sixth pedagogical principle need to be commented. In the EBD program each semester has different themes and the traditional subjects are taught in portions relevant to the specific theme. In the master program a new theme is introduced, which is societal entrepreneurship. This theme does not follow the life cycle of a firm like the EBD program, but is integrating business process with societal processes thus approaching entrepreneurship quite broadly, opening for several kinds of entrepreneurial processes. Most entrepreneurship programs focus on new business creation. In comparison this program includes new business creation as no more than one kind of entrepreneurial process. The internationalization theme is part of the EBD program and in the master program as well. In the master program students are expected to deepen their understanding and experience of internationalization issues.

Theoretical knowledge in the EBD program is supported by portions of discipline oriented content covering a broad range of disciplines. In comparison the master program is more focused on business development and entrepreneurship theory thus specializing more in order to get deeper theoretical knowledge. As well the practically oriented projects are more extensive and deals with more complex processes. Further methodological courses are focusing action oriented methods and gives deepened methodological skills within this range of scientific methodology.

## **Conclusions**

The purpose of this paper has been to present a pedagogy of entrepreneurship education which brings practice and theory together in a balanced way and to illustrate how this pedagogy can be used coherently on bachelor and master level. The basic difference with the proposed pedagogy, here called entrepreneurial learning, when compared to traditional academic education is the way it deals with balancing theory and practice. While traditional education privileges theoretical knowledge entrepreneurial learning emphasize practice in a more balanced way. In both the bachelor and master program students are made responsible to design and acquire parts of the knowledge content based upon the project work and their personal interests. The project work is an important part of the education. In the bachelor program it is the quality of the project work that is deciding if the students get higher grades, while discipline exams only can give a pass. In the master program the curriculum had theoretical courses to start with complemented by methodological training before undertaking complex project work. The project work is expected to give significant contributions to the

development of the partner organizations/communities involved. To the end of the master program the students are then expected to use the (practical) outcome of the projects to contribute to theory.

Traditional education means a deductive approach starting with theory and ending with practice. Entrepreneurial learning means that you let theory and practice go hand in hand following an abductive approach. In the bachelor program themes and practice guides the education process and portions of theory are integrated in order to solve practical problems. In the master program theory is taught to provide students with an enlarged interpretative repertoire, then indulging in practice and at the end using practice to contribute to theory, Experiential learning also uses an abductive approach but in comparison entrepreneurial learning is not limited to learning by doing in its pure form, as theoretical knowledge is guiding the practical project work, although in a balanced way. The projects are expected to solve the real and experienced problems of the partner organizations/communities and if the theories the students use are not adequate new theoretical knowledge/enlarged interpretative repertoire are expected to be acquired.

The amplitudes between practice and theory in the master program are higher compared to the bachelor program. In the latter project work is more limited in scope, with a progression to be more and more complex. The master program deals with more complex processes. This is why theoretical courses are separated from project courses. This separation together with methodological training helps the students both to get close and deep into practice but as well allow for needed distancing from practice in order to be able to reflect critically on practice as well as allowing enough time to be able to use practice to bring back theoretical contribution.

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**Professional Learning Community and Principal Leadership in Song Ping Primary  
School: a case study in Mainland China**

**Topic area:** Elementary Education

**Presentation format:** Paper Session

**Brief Description:** This paper introduces the professional learning communities observed in one primary school section in mainland China and the role school principal is playing in the process of building PLCs.

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## **Abstract**

The objectives of the study are to explore 1) the characteristics of professional learning communities (PLC) in the observed primary school and 2) how does principal leadership influence the professional learning community, i.e. what is the role of principal in the process of building professional learning community in the primary school in Shenzhen, China. As a qualitative case study, data are collected through interviews, observations and school documents. Teachers and the principal are interviewed in semi-structured questionnaires. Data analysis is conducted using NVIVO software. Results show that in the observed school, the characteristics of PLCs are evidently found: Shared values and vision, Collaborative culture, Supportive and shared leadership. Strong professional learning communities are observed and identified in this school. The study also found that several leadership styles (i.e., instructional leadership, distributed leadership) have been observed through the building of PLCs and within the progress of the school reform. Detail results of how instructional leadership influence the professional community is presented and further discussed. The study takes the first attempt to explore professional learning community in primary school section in Mainland China. The study further explores relationship between principal leadership and PLCs to better understand the mechanism. The research will certainly enrich the area and stimulate further studies.

**Title:** Exploring Methods for Improving the Design of Prospective Teachers' Mathematics Content Course

**Topic Area:** Mathematics Education

**Session Format:** Paper Session

**Description:** In this project, we developed and piloted a framework to explore methods for improving the design of K-8 prospective teachers' mathematics content courses. We aim to design coherent curricular materials that are needed to implement service-learning in a mathematics content course for prospective K-8 teachers. We also investigate the impact of service-learning by exploring relationships between service-learning experiences and prospective teachers' learning outcomes, changes in professional development and perspectives of civic engagement.

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## **Exploring Methods for Improving the Design of Prospective Teachers' Mathematics Content Course**

### **Introduction**

A recent research report from the National Survey of Science and Mathematics Education (NSSME) shows that mathematics and science teachers in the elementary and middle school grades do not have strong content preparation in their respective subjects and they do not feel equally prepared in each area (Banilower et al, 2013). In the mathematics education research community, the quality of preparation of future K-8 teachers has always been a central concern. To address this concern, Phillips and colleagues provided the opportunity of an early field experience to pre-service elementary teachers to enhance their content knowledge and beliefs *while* they are learning the mathematics they would teach (Phillip, et al., 2007). However, very little research has studied K-8 prospective mathematics teachers' learning through authentic instructional experiences *before* their admission to a teacher education program. That being said, most prospective teachers' learning experiences in mathematics take place in college classrooms. To explore methods for improving the design of mathematics content courses for prospective teachers, the question that motivates this study and guides the analyses of learning was: What types of curriculum materials are operative in helping prospective elementary teachers gain knowledge needed for effective instruction and an appreciation of the important connection between mathematical content and pedagogy?

### **Theoretical Framework**

#### **Cobb's View on Mathematical Learning**

Cobb (1994) argued, "Mathematical learning should be viewed as both a process of active individual construction and a process of enculturation into the mathematical practice of wider society" (p. 13). Sociocultural and constructivist theorists both highlight the crucial role

that activity plays in mathematics learning and development. The main difference between the two is that sociocultural theorists typically link activity to participation in culturally organized group practices, whereas constructivists give priority to individual students' conceptual activity. That is, constructivists analyze thought in terms of conceptual processes located in the individual, whereas sociocultural theorists take the individual-in-social action as their units of analysis (Minick, 1989; Sfard, 1998). For example, when teacher educators try to *create* experiences for pre-service teachers to enhance their conceptual understanding, they view mathematical learning as active construction. In contrast, when teacher educators value pre-service teachers' interests and connect them to ideas and traditions, emphasizing the importance of social interaction, and culturally organized activities, they view mathematical learning as enculturation. Cobb encouraged the mathematics education community to explore ways of coordinating constructivist and sociocultural perspectives because, "Each of the two perspectives, the sociocultural and the constructivist, tell half of a good story, and each can be used to complement the other" (p.17).

### **How Service-learning Fits Cobb's View**

Service-learning is a teaching and learning pedagogy, that provides a course-based educational experience in which college students participate in an organized service activity that meets the needs of the community (in our case, schools), enhances their understanding of course content, and fosters a broader appreciation of the discipline. The integration of service-learning is a new method of teaching and learning to improve the design of mathematics content courses for K-8 prospective teachers. This integration of service-learning provides students the opportunity to have socially and culturally diverse interactions with elementary school children through organized mathematics activities. In this account, we expected the interactions with diverse elementary school children would influence the processes of prospective teachers'

mathematics reasoning and its increasingly sophisticated mathematical ways of learning the content. Encouraged by Cobb's view, this project has chosen to explore the impact of service-learning on prospective teachers' learning.

### **Methods**

In the United States, the development of mathematics content knowledge of future elementary and middle school teachers takes place in undergraduate courses. In many teacher education programs, prospective teachers are required to take one or more mathematics content courses from a mathematics department prior to admission into the teacher/education program. As in many college-based mathematics content courses for prospective teachers, in our institution, Math 157, *Structure of Arithmetic for Teachers* is a typical mathematics content course for K-8 prospective teachers, focusing on numbers and operations. Math 157 is a lecture based, 4-credit course, in which prospective teachers meet three times a week.

### **Participants**

The project started in a Math 157 service-learning classes with 25 participants at a northwestern university in the United States. The Math 157 course was designed to have hands-on experiences through service-learning in addition to their Math 157 course work. During the first week of the semester, the service-learning staff at our institution gave a service-learning demonstration during a class time and then all participants were scheduled to have an orientation at the local schools. To complete the course, all participants were required to provide 10-hours of service at a local elementary school throughout the semester as a requirement of their course content.

### **Choice of Schools**

When choosing schools, we first considered schools where our institution had established service-learning experiences and where the teachers were already familiar with service-learning. A second consideration was to choose schools that varied in student composition. It is important for the project to learn more about how the implementation of service-learning curriculum would need to be tailored to family background of students. We decided to start with three public schools representing a range of contexts so that prospective teachers would have the opportunity to have social interactions with students with different cultural and socio-economic backgrounds. The three schools are community partners of the service-learning program at our institution and would allow prospective teachers to see the diverse types of public schools, mathematics curriculum and teaching methods. Brief descriptions of the three schools are as follows:

The first school is a Title I school in which 85% of students qualify for free or reduced lunch. Collectively, these students speak more than 25 different languages. This school was chosen for this project because of its tremendous diversity, high percentage of students from low-income households, and its commitment to high quality education.

The second school is a charter school that offers students hands-on exploration and a project-oriented learning environment. This school was chosen for this project because of its innovative mathematics instructions which includes flexible student grouping across mathematics ability, the use of computer technology and the expectation that all students are provided a mathematical thinking environment in which to learn.

The third school is a mathematics and science school which offers students a project-based learning opportunity in a small school setting. This school was chosen for this project because of its focus on professional development in mathematics through cross-grade level collaboration and the opportunity it affords prospective teachers to be in this environment to

participate in an innovative teaching practice. It has 38% of students qualify for free and reduced lunch.

All participants worked with one of the three public schools based on their available schedules and the convenience of traveling between our institution (taking classes during the week) and the schools (providing services at local schools).

### **Data collection**

#### **Learning Mathematics for Teaching Assessment**

The *Learning Mathematics for Teaching (LMT) Assessment* assesses teachers' content knowledge for teaching elementary mathematics in *Number Concepts and Operations, Patterns Functions and Algebra* and *Geometry*. (Hill, Schilling, & Ball, 2004). We chose the LMT assessments for its fit with Math 157 course contents for the project, and as a reliable measure of prospective teachers' overall level of mathematics content knowledge growth over time.

We used the Teacher Knowledge Assessment System (TKAS) for administering the LMT assessments online for all students at the first week of the semester (pretest) and at the last week of semester (posttest) to all participants. All pre and posttests were conducted during the class time. The LMT tests were analyzed to determine the change in prospective teachers' content knowledge as a group while attending the class.

#### **DEAL Model for Written Reflections**

Reflecting on experiences is a key component of successful service-learning programs, and well-designed reflection processes encourage students to use problem-solving and higher order systematic thinking (Eyler & Giles, 1999). We chose to use and modify Ash & Clayton's (2009) DEAL Model for critical reflection to develop a schematic prompt to help prospective teachers extract meaning from their hands-on experiences, because it has been explicitly

designed and refined to generate, deepen and document learning. The DEAL Model consists of three sequential steps, namely, *Describe*, *Examine* and *Articulate Learning*. Each step is supported by specific prompts to guide students learning up through the evaluation level of Bloom's Taxonomy (1956).

As part of curriculum materials for this course, critical reflection questions were designed to help prospective teachers reflect on their learning in writing throughout the semester. Table 1 provides the information on the design of reflection prompts as well as sample questions for each DEAL Model step during the ten weeks of service learning.

Table 1.

*DEAL Model critical reflection with sample questions in a 10-week period*

Describe	Weeks 1-2 (n=2)
For Describe, reflection prompts are designed to guide PSTs observing social-cultural mathematics classroom norms at Grades K-5. Sample questions:	
<ul style="list-style-type: none"> <li>• What was the mathematics discussed in the class? How did students/teacher talk about it?</li> <li>• How did the students and their teachers interact with each other during the class?</li> </ul>	
Examine	Weeks 3-8 (n=6)
For Examine, reflection prompts are designed to guide prospective teachers (PSTs) focusing on examine how academic learning from Math 157 and personal growth connect to their service at schools. Sample questions:	
<ul style="list-style-type: none"> <li>• What mathematics did you learn in Math 157 that was related to your service? How did you use your understanding of mathematics concepts in your service? Or where did you find your lack of understanding of mathematics concepts limiting your actions?</li> <li>• How did your service change or not change who you want to be as a mathematics learner</li> </ul>	

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and a future teacher? What assumptions and expectations about yourself as a learner and a future teacher have been unearthed through your service?

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Articulate

Weeks 9-10 (n=2)

Learning

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For Articulate Learning: reflection prompts are designed to elicit more meaningful reflective thinking by considering that their learning has value *beyond* the context of service experience.

Sample prompts:

- I learned that.... Identify and explain an aspect of yourself as an early teacher, a mathematical learner and/or evidence of one or more Math 157 concepts that you are beginning to understand better.
- I learned this when.... Clearly connect the learning to your specific SL-related activities so that someone who was not there would understand, including a discussion of the positive and negative impacts.
- This learning matters because.... Consider how this learning will affect your beliefs of yourself as an early teacher; affect your beliefs of yourself as a mathematical learner; or affect your understanding of Math 157 content knowledge
- In light of this learning I will.... What do I need to do to improve as a learner AND as a future teacher?

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*Note.* Modified source: Ash, Clayton & Moses. 2009. Teaching and Learning through Critical Reflection.

### **Results**

Given a small sample size (n=25) of the study, there was no identified statistical significance in participants' performance using a paired-sample *t*-test. However students did perform better in their final exam than the students in the previous semester. Although we cannot

draw any conclusions on the changes in mathematics content knowledge as a group regarding to the LMT tests, we found changes in their beliefs and attitudes towards mathematics learning and teaching as a result of service-learning. In the following section, we share our findings from participants' critical reflections over the ten weeks services at local schools.

### **Critical Reflections**

Analyses of participants' written reflections revealed their mathematical learning in content and pedagogy as a result of service-learning outside of the college classrooms. In this section, we share samples of service-learning students' critical reflections regarding to the DEAL Model sequence in *Describe, Examine* and *Articulate Learning* during their ten weeks services at schools to show some keys elements of their learning. To narrow the scope, in this paper we focus on the questions that prompt students to reflect on their mathematical learning and connections to their perceived applications of mathematics.

**Connecting service-learning to mathematics content.** The reflection questions such as, "What mathematics did you learn in Math 157 that was related to your service? How did you use your understanding of mathematics concepts in your service? Where did you find your lack of understanding of mathematics concepts limiting your actions?" guided prospective teachers' to the process of participating and then reflecting their service at schools. We found that for students' who did well in their Math 157 classes, service-learning helped to enhance and to apply the mathematics learned in a new context at schools. Anna<sup>1</sup> wrote, "One specific thing that I discovered is that I am beginning to see multiple ways to teach/and or solve different mathematical problems."

In contrast, some prospective teachers who were still learning the concepts introduced in Math 157 class, service-learning provided an opportunity to re-learn fundamental mathematics

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<sup>1</sup> All participant names used in the paper are pseudonyms

from the elementary classrooms. For example, Abbie shared the following experience:

I have also learned new ways of applying math concepts to everyday life so that it is easier for students to remember and learn the concepts. I noticed that I would need more experience with students in classrooms and teaching effectively to young children.

Funda wrote:

I know that I do not want to teach math, but I have known that all along. Being in a math class this semester has also changed how I approach the subject. I am no longer afraid of not being able to teach math, which I was afraid of because I wasn't very good at it. This has made me want to learn more about how to teach students and how to reassure myself that I can teach all the subjects. Understanding math more will make me more confident when I am teaching math to students.

Mike wrote this about his past experience:

This service learning experience has helped me to see the importance of math on a personal level. Growing up, I was always behind in math. I find math to be very intimidating and scary specifically fractions and word problems. If I cannot get a better handle on my own issues with math, then how will I be an effective teacher, especially for middle school?

The most revealing part of the reflections which prospective teachers provided is the change in their attitudes towards mathematics and towards mathematics learning. For example, to respond to the question, "How did your service change or not change who you want to be as a mathematics learner and a future teacher?"

Cindy wrote this about her experience:

I believe that the service-learning portion of our Math 157 class has truly helped further prepare me to work in the classroom and with students. I was able to put to use what I had learned in class, which is definitely a part of the learning process. I believe that in order to gain a better concept about what one has learned they need to teach and explain to others what they have learned.

Ella wrote, “After service learning I really believe that I could be a great math teacher if I continue to understand math concepts and new ways to teach them in order to connect with all levels of students.” Linda described, “I have learned a lot from service learning. You don’t truly understand something until you can teach it. I have found this to be true during my service.” While Rina made the connection between her learning of the mathematics content course, not only to her performances, but the importance this knowledge would have in her future career. She states, “My service learning experience also helped me realize that what the instructor is teaching us in class is really important, because someday we will have to explain it to a student, and she showed us how to do that. “

At the last two weeks of services, we asked our prospective teachers to summarize their learning experiences through the last DEAL step of *Articulate Learning*. This process helped prospective teachers to reflect their learning experience as a whole over the ten weeks period. We learned that an *effective* hands-on experience through service-learning depended on a thoughtful curriculum design in which students had the opportunity to experience *and* were able to reflect on their experiences.

### **Conclusions**

As a case study, we implemented service-learning as hands-on classroom experiences paired with a mathematics content course. This pedagogy offers an opportunity for prospective

teachers to learn or relearn the mathematics outside their traditional college classrooms, and made it possible to incorporate to Cobb's (1994) view, "Mathematical learning should be viewed as both a process of active individual construction and a process of enculturation into the mathematical practice of wider society" (p. 13), with what service-learning could offer to better prepare our future teachers. In our study, service-learning provided prospective teachers the opportunity to have socially and culturally diverse interactions with elementary school children through organized mathematics activities. In this account, we made the first attempt that the interactions with diverse elementary school children could influence the processes of prospective teachers' mathematics reasoning and its increasingly sophisticated mathematical ways of learning the content.

In terms of curriculum materials to incorporate service-learning in a mathematics content course, we found that choice of school partners, reflection prompts, extra readings on tutoring students, poverty and time management on service-learning are crucial components of curriculum design. For example, our prospective teachers are new to teacher education program and most of them do not know or do not understand what kind of work teachers do daily. Therefore, the choice of schools and classrooms in which these prospective teachers will be placed becomes an important decision to make as part of course design. We learned from students' critical reflections that our prospective teachers viewed classroom teachers as their role-models in teaching mathematics and they have in part, nurtured prospective teachers' learning experiences in their classrooms. The DEAL Model for critical reflections provided a framework helping prospective teachers to reflect and documents their service-learning experiences.

The analyses of their critical reflections revealed the potential of mathematical learning in both content and pedagogy as result of service-learning. In particular, to some low achieving students, being able to be part of elementary mathematics classrooms, service-learning provided the opportunity to re-learn the materials taught in the class, that successful prospective teachers would then be instructing in their subsequent student teaching courses and possible careers.

We found that exploring service-learning as a method of improving the design of a mathematics content course took a first step to make connections simultaneously between how mathematical knowledge was learned in a college classroom, and how the knowledge was re-learned or strengthen in a new context, culturally organized elementary classrooms. It also took a first step to reconsider the possibility of multiple approaches of curriculum changes in mathematics content courses for future teachers in our teacher preparation program.

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Running head: THE PERFECT PAIRING

**The Perfect Pairing: The Adult Learner and Start-Up Boutique Wineries**

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## **THE PERFECT PAIRING: THE ADULT LEARNER AND START-UP BOUTIQUE WINERIES**

### Abstract

This study explored the role of adult learning and its impact on the performance of small boutique wineries operating in the start-up phase of the organizational life cycle. The research objective was to identify connections relationships between learning and progress of a small business. Fourteen entrepreneurial individuals from four wineries were interviewed in their workplace for this qualitative study. The findings provide information about connections between adult learning in a specific workplace context and industry.

### **Introduction**

Often with little, if any, appropriate education or practical experience, entrepreneurial owners and managers enter a market. They are looking to grasp a unique opportunity, but are frequently caught unprepared for realities of meeting challenges that face small businesses. This study explored the process of learning as experienced by owners and managers of small, local boutique wineries operating in the start-up phase of the organizational life cycle. The purpose of the study was to determine the effect of adult learning on business performance. This article highlights results and themes from the larger study; adult learner entrepreneurs in boutique winery businesses make a perfect pairing.

Small business, or entrepreneurial, contexts provided a unique lens for exploring adult learning. The winery sites participating in this study were operating in a young, emerging industry in a geographic region. Our exploration offers insights into how adults' learning can influence organizational growth and success.

Acknowledged as one of the fastest growing segments of the economy in the United States, small businesses have become particularly appealing for many individuals who have become displaced or unemployed in the current economic downturn (Lans, Biemans, Versteegen, & Mulder, 2008). Small businesses are recognized as “engines of economic development” (p. 598) because of their rising influence in today’s world.

As a part of our changing economy and appeal of the emerging wine industry, individuals have become motivated to start and operate small boutique-style wineries. During early years of small business formation, also known as the start-up phase, operations can be intense and difficult. Even during ideal times with appropriate resources over half of new organizations fail within four years (Kaplan & Warren, 2007; Scarborough, Wilson, & Zimmerer, 2009). Boutique wineries emerged as a ripe context offering an in-depth view of learning for the study.

This phenomenological, qualitative study explored the process of learning experiences of adults who represented the owners and managers of small, local winery businesses. While extensive literature is available about adult learning, research detailing descriptions of the personal learning experiences of entrepreneurial individuals in a small business context is lacking (Choy, 2009; Cope, 2005). The study examined adult learners in an environment in which they constructed and gave meaning to their experiences. Results provide a greater understanding of the influence and impact of learning during the start-up phase, offering direction to future small business entrepreneurs. Researchers advocate for more study in a wider variety of contexts to develop a deeper understanding of the role environment plays in learning (Casey, 2005; Knowles, Holton, and Swanson, 2005; Phelps, Adams, & Bessant, 2007). Discussion has also surfaced among scholars about developing greater insights into practical applications addressing needs of specific industries (Beverland & Lockshin, 2001; Masurel &

van Montfort, 2006). Further exploration of these relationships in small business contexts can provide insights into what creates an atmosphere where individuals are given more opportunities to learn, and therefore, positively impact performance of a business.

#### Related Adult Learning Literature

The field of adult learning or andragogy represents a “set of core adult learning principles that apply to all adult learning situations” (Knowles et al., 2005, p. 2). An increased focus on the adult learner recently has created a corresponding interest in research. According to Sadler-Smith (2006), “Learning is a longer term change in the knowledge possessed by an individual, their type and level of skill, or their assumptions, attitudes and values which may lead to them having increased potential to grow, develop, and perform in more satisfying and effective ways” (p. 4). Transformational learning theorist Mezirow (1996) stated “learning is understood as the process of using prior interpretation to construe a new or revised interpretation of the meaning of one’s experience in order to guide future action” (p. 162). Both definitions include an emphasis on potential expectations as a result of individual change occurring in the past. Even though scholars across disciplines have contributed to the adult education literature a constant evolving environment and needs of the individual learner continually create a demand for innovative research and new assumptions to be developed.

Knowles, Holton, and Swanson (2005) advocated a transactional model, *Andragogy in Practice*, as a guide to explain how adult learners adapt their learning to their distinctive environments. The unique characteristics and experiences of each individual influence and determine how learning occurs and what learning will result (Knowles et al., 2005; Kolb, 1984). Their model advanced the idea that an integration of learning and environment provides a direct impact on learning effectiveness, and often occurs due to conflicts or problem-centered contexts

(Knowles et al., 2005). Small start-up wineries provided contexts to study adult learning in a challenging, uncertain environment and a unique dimension to the learning process.

### *Transformational Learning Theory*

Mezirow (1978) introduced transformational learning theory as an expansion of adult development and learning theory. This expansion is recognized as an increasingly important element of the adult learning discipline because it offers a specific lens, which clarifies how adult learners give meaning to and understand their experiences. Transformational learning provides the key to developing an awareness of how learning occurs in a more profound, meaningful way in response to conflicts and new experiences. Taylor (1997) advocated for a stronger connection between transformational learning and adult learning by stating, “transformational learning is considered uniquely adult” (p. 5) and applied distinctly to the field of andragogy.

Previous individual knowledge and understanding form a “frame of reference – a mindset or worldview of orienting assumptions and expectations involving values, beliefs, and concepts” (Dirkx, Mezirow, & Cranton, 2006, p. 124). Relationships, the role of culture, and societal norms need to be given consideration (Choy, 2009; Mezirow, 1991). Furthermore, transformational learning demonstrates learning encompasses more than merely developing skills (Choy, 2009). The process is significant, leading to a fresh way of thinking and addressing problems.

Two major factors recognized as crucial to transformational learning include critical reflection and rational discourse (Kitchenham, 2008; Mezirow, 1978, 1994, 2003; Taylor, 1997). Reflection allows an individual to develop greater potential to appreciate emerging knowledge and ideas. Active self questioning helps learners become more aware of their beliefs and assumptions. Reflection highlights the process of perspective and behavior formation. Rational

discourse arises from interactions enabling an individual to assess the validity and value of others' beliefs. It results in enhanced learning while expanding greater self-awareness (Mezirow, 2003). Addressing the need for current research on transformational learning in context, Choy (2009) advocated learners use context to establish meaning and shape interpretations. The workplace can be explored to develop an understanding of existing norms and assumptions.

### *Entrepreneurship and Entrepreneurial Learning*

Entrepreneurship involves practices associated with the creation and start-up of new organizations, typically with profit motives accompanied by risk and uncertainty (Baum & Locke, 2004; Dyer & Ross, 2008; Kaplan & Warren, 2007; Scarborough et al., 2009). As the field has evolved and segmented, researchers began addressing the need to study *how* entrepreneurs learn, or entrepreneurial learning, defined as “learning experienced by entrepreneurs during the creation and development of a small business enterprise” (Cope, 2005, p. 374).

According to Cope (2005), five dimensions are included in the entrepreneurial context: (1) learning about oneself; (2) learning about the business; (3) learning about the environment and entrepreneurial networks; (4) learning about small business management; and (5) learning about nature and management of relationships (p. 380). Entrepreneurial learning transforms prior experiences into valuable knowledge allowing new information to be integrated into an individual's existing framework with future behavior changing as a result (Holcomb, Ireland, Holmes, & Hitt, 2009; Politis, 2005; van Gelderen, van der Sluis, & Jansen, 2005). Learning becomes a critical aspect of the entrepreneurial process “it is through learning that entrepreneurs develop and grow” (Cope, 2005, p. 379). Politis (2005) acknowledged, “entrepreneurial learning

is often described as a continuous process that facilitates the development of necessary knowledge for being effective in starting up and managing new ventures” (p. 401).

The preceding theoretical perspectives provided a foundation to view the impact of individual learning on growth and progress of small businesses operating within the start-up phase of the organizational life cycle. The emerging relationships between the perspectives invited further examination.

### Methodology

Qualitative, phenomenological methodology provided the framework for viewing the learning process in a natural setting. Qualitative inquiry enables the researchers to “discover and understand how people make sense of what happens in their lives” (Locke, Spirduso, & Silverman, 2000, p. 97). Through a process of investigating the meaning individuals gave to their lived experience, a construction of realities, perspectives, and accumulated experiences was sought (Bogdan & Biklen, 2003; Merriam, 2002). Semi-structured interviews supported with observations and artifacts were used to gather data which focused on “key patterns of interactions” to explore the world of adult learning and provide a richer, detailed picture of the process (Mezirow, 1978, p. 108).

Participants were asked to share and reflect on their most memorable learning events, which created a profound personal change in perceptions and attitudes (Cope, 2003). Direct contact was made in a natural setting in order to develop a clearer view of how people interact in their world because human behavior is greatly influenced by the environment in which it occurs (Bogdan & Biklen, 2003; Locke et al., 2000; Merriam, 2002).

The study included stories of learning experiences from individuals in four small boutique wineries operating within the start-up phase of the organizational life cycle (see Table

1). Fourteen entrepreneurial owners and managers participated in the semi-structured interviews (see Table 2). The connections and patterns that arose were analyzed and meaning was given to the data collected (Bogdan & Biklen, 2003).

Workplace observations were also conducted and allowed for a clearer understanding of the interactions, relationships, and participant perspectives (Maxwell, 2005). Observed behaviors in the winery settings enriched the interview data and permitted the researchers to become more familiar with the owners and managers as well as the context, and gather additional data to form a more complete picture of participant learning. Observations took place in the wineries, tasting rooms, and vineyards. Interactions and relationships between the entrepreneurial owners and customers, employees, and volunteers were observed as well as interactions between the owners and managers. The observations clarified relationships and provided a richer picture of the learning dynamics in each context. Follow-up interviews informed the data collection process as participants elaborated on earlier information

Purposeful sampling was employed in the initial choice of sites and participants (Maxwell, 2005). This sampling strategy involved deliberate selection of participants in an identified context concerning an activity most likely to exhibit the phenomenon of the learning process in which the researchers were exploring (Maxwell, 2005). The objective provided insights judging to have the potential to be most significant or appropriate by the researchers given the goal of the study and what the researchers wanted to learn (Maxwell, 2005; Merriam, 2002).

The selection process criteria included a specific industry, age and size of the winery businesses, and geographic location. The wineries were considered very small by the wine industry, termed “boutique winery” operations, having few, if any employees. The owners

served as managers and key decision-makers and accordingly, strongly impacted the business performance (Lans et al., 2008). Boutique winery is a term used in the wine industry and refers to the level of production. With an annual production of 1,000 cases of wine or less the wineries site in this study were categorized within that size range for a length of time during all or part of their start-up phase.

Each winery was operating in an early formation phase, or start-up, of the organizational life cycle. The longest period of operation for wineries in this study was approximately six years. The wineries were geographically separated from other wine producing areas, providing easier accessibility to for data collection as well as distinct settings and opportunities for studying entrepreneurial learning (Lans et al., 2008).

Fourteen face-to-face interviews were conducted. Each interview session lasted approximately 60 to 90 minutes. Emails, phone calls, and face-to-face methods were utilized for follow-up questions. To help ensure greater accuracy and for review and verification purposes, responses were tape-recorded and transcribed verbatim as each interview was completed.

As recommended by Moustakas (1994) for data reduction with phenomenological studies, the data from each of the fourteen participants was analyzed and organized into a coding scheme from which six themes emerged. As the learning patterns became apparent, comparisons and differences between contexts and individuals materialized. The data clarified connections and provided evidence to develop a culminating description of the role adult learning has on the characteristics of the small businesses.

### Findings

The findings demonstrated a strong relationship between the learning experiences of the participants and context of the businesses. Small boutique wineries operating in the start-up

phase provided a challenging, dynamic environment, advocating the role of context as a significant effect on all types of learning. Small wineries operating in a start-up environment offered a lens to view the contextual influence as an impetus for learning and change (Cope, 2005; Knowles et al., 2005; Mezirow, 1978). The participants' learning demonstrated strong connections between fields of adult learning theory, transformational learning, and entrepreneurial learning.

Identifying themes led to a more clearly defined thread between individual learning, comparable learning experiences, and discovery of differences. The themes evolving from the data analysis included: (1) Developing an entrepreneurial sense; (2) Relationships; (3) Challenges; (4) Learning; (5) Joy or enjoyment; and (6) Reflection.

#### *Developing an Entrepreneurial Sense*

Developing an entrepreneurial sense and relationships were identified as having the most significance to the purpose of the study. Participants described their experiences as "learning" woven into their everyday work environment. Their descriptions reflected behaviors of developing an entrepreneurial sense; they learned what was needed to keep their businesses going while becoming more competent. Learning occurred as individuals developed abilities to perform what would become routine responsibilities as new situations were encountered. Participants' learning skills helped them to adapt and improve their responses to environmental circumstances.

Activities described by participants indicated strong connections between their experiences and each of the five major dimensions of entrepreneurial learning as advocated by Cope (2005). Entrepreneurial learning enabled participants to form a broader view of the

environment and adapt to changes. Hence, their learning facilitated the process of “starting up and managing new ventures” (Politis, 2005, p. 401).

Participants had little, if any, previous or related experiences in the wine industry, small business management, or starting a business. One participant explained:

When I started thinking about a winery, I wasn't even 21 yet... I never would have done it on my own. I was too young. I didn't have enough money. The world of business, taxes, paperwork, everything, and it was just a big world out there.... The thought of going through all the paperwork to start a business and tackle that when I was a scientist, still to me this day is a different world because I am so much on the production end of it. Activities described by participants related to professional growth because they symbolized the participants' ability to learn, adapt, and become more knowledgeable. They integrated learning into the workplace, creating a positive influence on wine production and improved management skills.

Participants discussed a growing awareness of themselves and how their views evolved as they developed a sense of what had become important in their lives as a consequence of starting their wineries. One of the key elements of entrepreneurial learning includes learning about oneself (Cope, 2005). Abby reflected:

That's another thing, dealing with customers.... I worked in a lab, so learning how to deal with customers at a retail level is different.... We're [Abby and husband] pretty shy people but I have to put myself out there. I had to learn that to make it.

Participants shared stories representative of the strong relationship between learning and core adult learning principles of the Andragogy in Practice model (Knowles et al., 2005). They

focused on needing to know as situations arose. On the nature of learning, one participant summarized:

My own personal learning has been a lot of being self-directed to begin with... for winemaking, I read as much as I could.... and it was all self-directed, driven out of passion. Now there is a lot less time for that.... There is unfortunately a lot less learning now from other sources. Now a lot of it is trial and error.

Prior experiences also provided guidance when encountering challenging situations. New information was integrated into existing frameworks often with positive outcomes. Participants developed innovative skills and abilities over time further fueling a motivation to learn.

Challenging entrepreneurial context offered on-going dilemmas in which learning was used to cultivate and practice fresh approaches to problem solving. The participants' worldviews evolved, incorporating past beliefs and assumptions into new knowledge exhibiting facets of transformational learning (Mezirow, 1978). They learned from their actions, revising previous assumptions and changing future behavior based on new knowledge.

### *Relationships*

Equally important, relationships grew among owners and managers of the winery businesses and strengthened over the course of the start-up phase. These relationships were beneficial to participants and wineries representing an enjoyable, unexpected aspect of the management process.

Learning about the nature and management of relationships and networks represent two essential components of entrepreneurial learning as advocated by Cope (2005). The participants

described relationships as being an important aspect of the business environment in the wine community. Sophie stated:

I was just explaining this to my boss at my other job.... He was asking me how I did something so well at the winery. I said, "I sell passion." It is not always about the product and whether it is good... when the customers come through that door, they want the experience. They want the good feeling that they are going to get.

Relationships became a fundamental part of entrepreneurial networks exemplifying the importance of business connections. Individuals at three wineries set goals of using locally sourced grapes for their wine. Sharing similar aspirations led to a stronger community among the individuals involved. Callie shared:

My role has been more in trying to get those that are already growing to raise the bar and increase the quality of the fruit and use different viticultural practices. I have tried to get them to communicate as a group rather than having all isolated growers in the valley, to get them unified, talking to each other about what is going on in their vineyards, going out and walking the vineyards, talking to the growers, and trouble-shooting. Then building trust with them, if they do raise the bar, that they will be compensated for that.

Abby also reflected, "Our relationships with the growers that we buy from have become really special. You have to trust your growers and your growers have to trust you. We know that first hand, being growers ourselves."

The relationships developed as philosophies were being shared. The connections were valued and it was anticipated they would endure through time. The entrepreneurial component of relationships was seen as a key to survival and, ultimately, an avenue of growth for the small wineries.

The relationship experiences signified a critical aspect advocated in transformational learning as well (Mezirow, 1978). Rational discourse as an element of transformational learning occurred when individuals described approaching others in response to challenging situations. Participants first used trial and error, and if results were unsatisfactory, engaged in discussion local winemakers and growers in the regional wine industry as resources.

Interview data indicated a strong connection between these entrepreneurial individuals and their ability to develop an entrepreneurial sense while creating significant business relationships. An essential facet of developing an entrepreneurial sense was associated with establishing and strengthening valuable relationships enabling the small wineries to adapt and find an avenue to be successful. Ample evidence was collected exhibiting collaboration and cooperation among all participants.

### *Challenges and Learning*

Numerous connections were found between elements of transformational learning demonstrating critical reflection and rational discourse (Mezirow, 1978, 2003). Participants described challenging situations illustrating these connections. When confronted with challenges and crisis, a need to evaluate previously held assumptions was created. Self-assessment or critical reflection occurred as participants looked within themselves to find answers. They also turned to others with which they had developed relationships for guidance and support. Participants learned to respond to dilemmas by questioning prior beliefs and developing a broader view of their world when adapting to their environment.

The Andragogy in Practice model refers to an adult's orientation to learning in which learning is problem-centered and contextual in nature (Knowles et al., 2005). Participants

welcomed learning and came to use it to improve skills and augment their base of knowledge in response to workplace challenges.

Interview questions were developed to encourage participants to reflect on and share their learning experiences; learning arose as another major theme. Applying Knowles, Holton, and Swanson's model, *Andragogy in Practice* (2005), to these individuals and their experiences offered insights into the adult learning environment.

Participants' goals were based on what they wanted to achieve directing future actions and behavior. Two adult learning principles promoted by Knowles, Holton, and Swanson (2005) involve a need to be autonomous and self-directed with a strong motivation to learn. The participants indicated a preference for making their own decisions and elected to spend time on learning key aspects of the winery businesses. They experienced a sense of accomplishment from these activities and, in turn, confidence emerged. Participants developed a heightened awareness of their learning preferences.

Learning was crucial, in part, due to the nature of the wine industry involving long periods of time between production and finished product. The winemaking process creates uncertainty, requiring a significant commitment. These factors necessitated learning about small business management and developing a deeper awareness about oneself (Cope, 2005).

Lane described the relationship between the learning process and how the work would be done, "in the end, we went to the persons who had the most interest... the greatest passion for the process.... Once we figured that out, it helped smooth things out." Learning was especially critical for the winemakers responsible for the finished product, the quality of the wine. Callie noted:

I am always learning and investigating what I could do with the wine.... I have never hit a point where I thought I have got it down.... so I am always learning.... and considering ways I could change things up.

The winemakers concentrated on activities that would enhance their wines, constantly thinking about improvements. Being involved in the process sealed their commitment to bring back grape growing and winemaking to the region where the industry's roots date back to the late 1800s.

### *Joy or Enjoyment*

The entrepreneurs choose to become involved in the wine industry because they sought to spend their time pursuing an enjoyable lifestyle. They wanted more from their work life: the resulting enjoyment was apparent in their shared experiences. Participants attributed progress of their small wineries to the learning process in which they experienced pleasure and satisfaction. A sense of joy or enjoyment was acknowledged by participants from performing their day-to-day activities as they talked about having a "passion" for work. The enjoyment created an incentive to learn more and represented an intrinsic value to the participants representing one of the core adult learning principles as advocated by Knowles et al. (2005).

Participants received validation about their work through remarks made during wine competitions. Recognition for improvements in quality were increasingly apparent as the learned more about the process, environment, and themselves (Cope, 2005). Winning awards boosted confidence because it provided a competitive arena where more resources, money, education and training, and state-of-the-art facilities were not considered. Growth was achieved, in part, by developing critical relationships (Cope, 2005; Mezirow, 1978, 1991, 1994, 2003).

Not only were participants surprised and happy with the quality of their wines but they also enjoyed the process of making wine as well. Goals reflected a desire to stay in control and be responsible for all aspects of the winemaking process as autonomy represents a major aspect of what made their lives so enjoyable (Knowles et al., 2005). Entrepreneurs' efforts were realized when drinking their own wines, seeing others enjoy them as well. Michael reflected: "You could just sit in the winery all day and taste and touch and smell, it was such a pleasure."

### *Reflection*

The reflection process helped to solve problems and develop new approaches as participants learned their craft. Reflection provided a vehicle for participants to look back and identify learning and attach meaning to it as advocated by transformational learning theory (Mezirow, 1978, 1991, 1994, 2003); it provided an impetus for change. Rational discourse allowed opportunity for discussion with others to further reinforce, question or challenge new information and attitudes while reflection also emphasized the role of prior learning (Knowles et al., 2005; Mezirow, 1978, 1991, 1994, 2003).

Participants both reflected and learned from rational discourse with others in the industry. Emerging themes involved reflection, from previous experiences to progression through the start-up phase. Participants described changes in their approach to problem solving due to recognition of a need to adapt and build upon prior knowledge (Knowles, et al., 2005). As they became more knowledgeable as winemakers, and small business managers, they experienced more satisfaction with life and work (Cope, 2005).

Frequently participants were confronted with a unique or new challenge requiring learning for a successful outcome and developing the ability to move forward. Learning, then, became valuable in at least two ways. First, participants became more receptive and open to

learning, changing their perspective and future actions as they saw rewards resulting from learning. Second, performance of the winery businesses improved and experienced growth. The true value of learning emerged in this challenging context. Reflecting on past experience led to strengthening the connection between learning and work, with the participants experiencing joy and satisfaction.

### Conclusions and Implications

The purpose of the study was to develop a better understanding of the effect of learning on the performance of small winery businesses operating in the start-up phase. Adult learning is recognized as a complex process strongly influenced by each learner's unique perspective and background and the context in which learning occurs. Learning as experienced by the entrepreneurial participants in this study was identified as the primary tool to approach challenges arising from the operation of businesses progressing through the start-up phase.

Reflection is a critical element in transformational learning theory (Mezirow, 1978, 1991, 2003). Use of reflection has also been advanced as an effective technique to help individuals approach problems and challenges in the workplace (Choy, 2009). It is important for learners to have an awareness of context in which learning is occurring (Cope, 2005; Minitti & Bygrave, 2001; Young & Sexton, 2003; van Geldern et al., 2005). The emerging regional wine industry offered an ideal venue to study the phenomenon of learning because participants lacked entrepreneurial experience or education and there were few resources available to them.

We found learning did significantly impact small winery businesses during the uncertain start-up period. Participants recognized *relationships* as an integral element of learning in this context. *Relationships* with other individuals who were experiencing the same issues provided support and insight into challenges.

The entrepreneurial owners frequently were unprepared for many of their new responsibilities. They quickly realized, by starting their own wineries, they became part of a small, eclectic group of entrepreneurial individuals in a defined geographic area seeking others with like goals and interests in life.

The entrepreneurial owners exhibited similar learner characteristics such as a need for autonomy and self-direction, which led them to becoming entrepreneurs. Autonomy and self-direction are elements of core adult learning principles advocated by Knowles, Holton, and Swanson (2005) and a key aspect of the entrepreneurial learning literature. Autonomous, self-directed individuals help stimulate entrepreneurial ventures due to independent actions fostering innovation and creativity. Autonomy is seen as a “driving force” because entrepreneurial individuals desire the ability to make their own decisions, which is advocated as a positive aspect of their work lives (Lumpkin, Cogliser, & Schneider, 2009, p. 47). It is generally recognized that these entrepreneurial characteristics affect the performance of most small businesses (Lumpkin et al., 2009).

The participants relied upon their relationships with each other when encountering problems because their roles and situations had many similarities. Local winery owners knew they were experiencing and confronted with comparable issues. They developed and strengthened connections with other entrepreneurial individuals as their small winery businesses were entering the start-up period about the same time in this region. The owners intentionally reached out to each other, wanting to be helpful in any way they could. Michael noted, “If I have a problem, I could call any of the other winemakers and visit with them.... Establishing and maintaining those relationships have been beneficial...” and Abby concurred, “We’re pretty close with the other wineries.... Everyone wants everyone else to success in business.”

The *relationships* they built and established offered an additional source of knowledge and assistance with individuals in the regional wine industry creating an atmosphere where encouragement and cooperation were common. The process of critical discourse, or communicating and sharing of insights and knowledge while interacting with others, provided a comfortable method of resolving problems. According to Mezirow (1978, 2003), critical discourse or discussions with others leads to change indicative of transformational learning. Participants identified learning from interactions with others involved in the wine industry, either locally or regionally, as being essential in their development and leading to better performance.

Relationships grew to represent an integral aspect of learning how to cope within the entrepreneurial environment. *Relationships* represent a major component of entrepreneurial learning as advocated by Cope (2005). *Relationships* provided a fundamental network of individuals necessary to performance and progress of the small businesses. Participants recognized all of the *relationships* they developed were mutually supportive of each other and represented comparable goals. The entrepreneurial owners discussed similarities and values and willing collaboration on current and prospective activities allowing each winery a greater capacity to grow and be successful. They chose an entrepreneurial lifestyle and enjoyed all that it encompassed with associated *relationships* with others being described as significant. By first learning, then educating each other, each individual and winery benefited, with the entire budding wine industry making progress as a result.

A second attribute involved the role and effect of *challenges* during the start-up of small winery businesses. The learning experienced tended to be both problem-centered and context-based. *Challenges* were a common element of the everyday work environment. The first preference of participants was to look within themselves and use trial and error and

experimentation to find solutions to dilemmas. Cope (2005) advocated learning about oneself and learning about the business as two components to entrepreneurial learning. Entrepreneurial owners in this study build upon existing knowledge by integrating new ideas into their previous framework helping them adapt to the environment. Research suggests a strong link between prior learning and experience in addition to learning being driven by problem-centered contexts (Holcomb et al., 2009; Knowles et al., 2005; Kolb, 1984).

Participants described learning as a part of a reflective, self-examination process which often involved discourse with others, creating a shift in thinking and influencing behavior. According to Mezirow (1978, 1994), a trigger in transformational learning is initiated by a crisis or dilemma in which an individual uses reflection and discourse to help reshape his or her assumptions and beliefs to adapt to the environment and create a new foundation for future action (Mezirow, 1978, 1994). These types of events usually present a significant *challenge* to individuals.

Currently held assumptions were questioned and ultimately to change in beliefs and values as the participants reflected. Their learning tended to be autonomous and self-reliant, but looking outward toward others as resources when appropriate. The learning experiences represented positive outcomes for individuals and business performance when they effectively dealt with *challenges* in the work environment and advanced their management and winemaking skills.

The final theme regarded learning as being fun and *enjoyable*. Learning led to formation of strong entrepreneurial bonds and relationships and helped constructively manage and cope with challenges in the environment. When successfully exhibiting an ability to learn and improve skills, participants experienced great satisfaction and enjoyment in their personal and

professional lives. They experienced fulfillment and pleasure in both accomplishments and sharing knowledge with others. Learning created unexpected surprises in the workplace. The nature of a product such as wine is this has unique characteristics, a final version being unknown for a considerable amount of time, and is affected by many diverse elements. Due to these challenging factors, it was a wonderful reward when a finished product resulted in a remarkable tasting wine. The owners enjoyed developing an ability to make good quality wine in an erratic environment: lack of winemaking and small business management skills, inadequate resources, and time constraints.

Participants overcame barriers of working with unfamiliar responsibilities in a new environment. They received accolades from recognized professionals in the wine industry and praise from a broadening base of customers. Each winery continues to grow and participants look forward to the future. Future collaborative projects are planned as well, with owners holding an optimistic outlook that the regional wine industry will expand.

It is *the perfect pairing* between willing adult learners and new small winery businesses. Learning experiences helped owners form an entrepreneurial identity by creating and strengthening relationships. Participants managed challenges and adapted to their environment through learning within themselves and cooperating with others. They enjoyed learning and grew as entrepreneurial owners, favorably affecting progress of the boutique wineries.

Implications suggest adults need to experience learning as an effective avenue to adapt and change to the environment, being especially critical for entrepreneurial individuals starting small businesses hoping to survive early uncertain years as they struggle through the initial start-up phase. Cope (2005) stated, “it is through learning that entrepreneurs develop and grow” (p. 379).

Small businesses are one of the fastest growing segments of our economy including many individuals becoming more engaged in the small business arena as owners and managers. The field of entrepreneurship is currently being integrated more universally into college and university coursework designed to meet the needs of the growing number of entrepreneurs. Regional educational institutions have begun to acknowledge this trend by introducing and expanding upon entrepreneurial courses, and in some instances, comprehensive entrepreneurial tracks to their business programs. It is a necessary appropriate adaptation to the business curriculum in the United States to meet the changing needs of the workplace.

The development of innovative and relevant curriculum in education will inform and guide support for entrepreneurial individuals. Researchers from diverse learning theory backgrounds and disciplines can study the role of context to create and improve practical tools to apply in the workplace and further examination across disciplines would inform past work (Choy, 2009; Corbett, 2005; Fenwick, 2008; Harrison & Leitch, 2005).

Managers and owners of small businesses, small wineries specifically, business educators, and human resource professionals are a few of the practitioners that could adopt or adjust practices to improve entrepreneurial performance. Successful entrepreneurs will develop abilities to use learning across contexts as it is assimilated into their existing foundation of knowledge as well (Holcomb et al., 2009). Members of the wine industry in this region have indicated they are in the initial stages of forming an association to provide assistance to each other and promote the industry and related endeavors. A mentoring program could be initiated connecting the owners and managers of local wineries with other interested entrepreneurs.

As participants in this study were assisted and positively influenced by learning from those who had gone before them, it is now their role to become educators. It is a *perfect pairing*

between the learner and the teacher as the cycle continues to promote the development of the local wine industry, promoting the healthy growth in a welcoming environment for a new industry.

Research to date addresses adult learning in small business context on a limited basis, yet adult learning is becoming an increasingly more important component of the personal and professional lives of individuals as they adapt to an entrepreneurial environment. “It is virtually impossible to imagine any human behavior that is not heavily mediated by the context in which it occurs. One can easily conclude that generalizations that are intended to be context free will have little that is useful to say about human behavior” (Guba & Lincoln, 1981, p. 62).

Small business organizations are often a culmination of a major life goal for an entrepreneurial individual, in addition to the desire for balance in one’s life. Consequently, a *perfect pairing* of the adult entrepreneurial learner and the wine industry emerged in this study.

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*Table 1. Winery Profiles*

Winery	Year Started	First Vintage	2010 Vintage	Owners	Employees
1.	2008	700 cases	1000 cases	2	3
2.	2004	450 cases	3600 cases	2	3
3.	2004	100 cases	800 cases	8	0
4.	2004	1000 cases	2000 cases	2	2

*Table 2. Participant Profiles*

Participant	Role	Education
1. Abby	Owner/Winemaker	BS Chemistry MS Food Science
2. Alvin	Owner/Manager	BS Electrical Engineering
3. Michael	Owner/Winemaker	ABD Computer Science
4. Sophia	Manager	BA, MA Philosophy MA Neuroscience
5. Callie	Owner/Winemaker	BS Chemistry, Microbiology PH.D. in progress

6. Ken	Owner/Manager	BS Chemistry MA soil Science
7. Jenny	Owner/Manager	AA Hygienist
8. Bill	Owner/ Manager	BS Engineering
9. Cathy	Owner/Manager	BS Nursing
10. Bob	Owner/Manager	BS Sculpture
11. Judy	Owner/Manager	BS Accounting
12. Jim	Owner/Manager	N/A
13. Lane	Owner/Manager	BS Pharmacy
14. Renee'	Owner/Manager	BA Literature, Foreign Language

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# Comparing the Responsibilities of Faculty Senates by Institutional Type and Senate Type

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## Abstract

Faculty senates provide a forum for the discussion of all issues of concern to faculty members. Research and theoretical knowledge regarding faculty senates' involvement in campus decision-making is limited (Minor, 2004). The purpose of this study is to determine if there are differences in the responsibility areas of faculty senate by type of institution and type of senate. The data used in this study were extracted from The Faculty Senate Leader Survey (FSLs). The FSLs collected information from senate leaders regarding the characteristics of the faculty senate and critical issues of concern to faculty at their institution. The sample consisted of 434 faculty senate leaders identified in the search and were invited to participate in the Faculty Senate Leader Survey. Approximately 207 senate leaders of master's institutions and doctoral institutions in the United States responded to the survey. A total of 105 senate leaders of master's institutions and 102 senate leaders of doctoral institutions completed the Faculty Senate Leader Survey. Descriptive statistics, factor analyses, and t-tests were used to analyze the data.

Faculty senates tended to be responsible for ensuring academic freedom, committee appointments, curriculum and academic programs, and faculty grievances. Areas that faculty senates appear to have no responsibility or only advisory influence are retirement plans, faculty compensation, and campus facilities. The results also indicated that there are differences in the responsibilities of faculty senates by type of institution and type of senate. It was concluded that doctoral institutions tend to have more influence in areas usually managed by both faculty and administrators compared to master's institutions. In regards to differences by type of senate, it was concluded that pure faculty senates tend to have more influence in areas managed by both faculty and administrators compared to mixed faculty senates. No differences were found in the remaining factors.

## Proceedings Submission

### a) TITLE:

Kindergartener's Strategy Development during Combining Tasks on the iPad

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### c) ABSTRACT:

The purpose of this project was to investigate and describe how Kindergarten children develop iPad interaction strategies during a combining task. The task investigate is part of the mathematics iPad application (app) Hungry Guppy. This app, requires children to quickly recognize small quantities and combine those quantities to create a sum of three or four. Our hypothesis was that children's initial app interactions and the development of interaction strategies are linked to mathematics learning.

The methods of analysis were qualitative. The participants in this study were 5 children, ages 5 and 6, all enrolled in Kindergarten during the 2012-2013 school year. The children participated in clinical interviews during which they used six different mathematics apps. This

analysis focuses specifically on children's interactions with Hungry Guppy. Three instruments were used to collect data during the interviews: video recording, iPad video screen-capture recording (using a GoPro camera), and observation protocols. Data were analyzed qualitatively for children's strategies and strategy development. The results of children's learning on the iPad will be described in terms of children's strategies, strategy development, and mathematics learning.

## Proceedings Submission

### a) TITLE:

The Socio-Cultural Importance of Writing and Sharing Autoethnographic Research

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### c) ABSTRACT:

The purpose of this interactive workshop is to present an autoethnographic research project and to engage participants in exploration of autoethnography as a valid and valuable qualitative research method. Autoethnography is a socially-conscious research act undertaken to study one's own self using tenets of autobiography and ethnography. The data collection methods include reading personal journal entries, writing about memories, and at times conducting reflexive dyadic interviews with other key event participants. Data is analyzed through an effort on the part of each author to write artfully and vulnerably about a personal topic while considering issues of memory and truth, ethics, risks, and the writing's possible effect on others. The findings of autoethnography are the stories themselves, relationships among the stories and their authors, and the stories' broader connections to culture. Autoethnographic research is open to interpretation by each individual reader. From this interpretation the reader

may draw conclusions and/or create connections between themselves, the author, and culture. In this way both author and reader contribute to a collective web of socio-cultural understanding. During this workshop, we will examine autoethnography methodology, share our experiences and stories, and facilitate participants' applications of autoethnographic techniques through writing and discussion activities.

## HAWAII INTERNATIONAL CONFERENCE

**TITLE:** "I LET THEM USE THEIR FIRST LANGUAGE": MAINSTREAM TEACHERS' PERCEPTIONS OF THE ROLE OF LANGUAGE AND CULTURE IN TEACHING ENGLISH LEARNERS

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**Format:** Poster Session

**Poster Session Title:** *"I let them use their first language": Mainstream Teachers' Perceptions of the role of language and culture in teaching English Learners*

### **Abstract:**

This paper presents a study of a long term professional development (PD) program for mainstream teachers of English Learners (ELs) in a large metropolitan school district with a significant majority of first language speakers of Spanish. This dissertation study reviews the case of 88 participants who comprise four PD cohorts participating in 10 month, 18 graduate credits ESL developed for these teacher cohorts.

The PD program included curricular aspects to support teacher understanding of EL students' bilingualism and second language acquisition, bi-literacy, and the role of parents and community. Curricular included the district's objectives for instruction of ELs increasing the program's coherence (Desimone et al, 2002; Garet et al, 2001) to participating teachers. Underlying the PD program is the theoretical perspective of Cochran-Smith & Lytle's (1999) addressing the notion that teaching expertise is enhanced through subject-matter study.

The study's findings revealed themes in participants' perceptions of language revealing the complex nature of teachers' affirming (Walker, Shaffer & Liams, 2004) and empathetic dispositions (Mcallister & Irvine, 2002) as well as an understanding of the sociolinguistic nature of language development (Harper & de Jong 2004; Lucas & Greenberg, 2008). The broader notions of language and culture indicated a view of supportive and non-supportive perceptions relative to EL students' first language and cultural connections in the classroom (Faltis & Coulter, 2008; Lucas, Villegas, & Freedson-Gonzalez, 2008). Overall teachers' perceptions were supportive of notions that bolster culturally responsive teaching (Villegas & Lucas, 2002).

The study has broader implications in preparation of teachers of ELs. Developing culturally responsive perspectives towards teaching ELs can be achieved through ESL curriculum. The implication on teacher education presents the possibility that in fact, teacher preparation should include preparation that fosters culturally responsive teaching.

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1. Title: A Study of Wh-Question and Clefting Productions in Children
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6. Full Paper

# A Study of *Wh*-Question and Clefting Productions in Children\*

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## 1. Introduction

The purpose of this paper is to explain why there is a time lag between children's output of *wh*-cleft sentences and cleft sentences. Although parents frequently provide young children with the stimuli of both of these two types of sentences in everyday speech, children seem to take more time to utter the former, compared to the latter; the data show that children acquire cleft sentences earlier than *wh*-cleft ones. Retrieving data from the Database CHILDES and examining the daily speech among children and those around them, I will demonstrate that the acquisition of *wh*-cleft sentences tends to occur later than that of cleft sentences. Moreover, I would like to suggest a theoretical reason for this phenomenon in the acquisition processes from the viewpoint of the Minimalist Program (Chomsky (1995), Grohmann, Panagiotidis, and Tsipplakou (2006), Hornstein, Nunes, and Grohmann (2005)). Section 2 will touch on the preceding study concerning the derivation of *wh*-cleft sentences. Section 3 will show and examine the results of the search of CHILDES. Section 4 will present two possible reasons why cleft sentences are acquired by children earlier than *wh*-cleft ones. Section 5 will present the summary of this paper.

## 2. Previous Work

From the facts that *wh*-cleft sentences undergo overt *wh*-movement, which is observed in Old Japanese,<sup>1</sup> and that they are D(iscourse)-linked, which means their *wh*-phrases are referential and specific, Matsuya (2011) claims that this type of *wh*-question is incurred by the presupposition. Assuming that *da* (= copular), which usually is used in declarative sentences, functions as a Q marker, Matsuya (2011) proposes that C contains a [-Q] feature and an interpretable presuppositionality feature ([+ P] feature) whereas a *wh* phrase has a [+ Q] feature and a [-P] feature. A *wh*-phrase moves to the Spec of FocP in order to check the [-P] feature, as (1) illustrates.

- (1) a. Ichiroo, who knows that Taroo went to the Takashimaya department store for shopping, says to her when he just came back home bringing the shopping bag:

Ichiroo: [TopP [CP Kimi-ga kinoo t<sub>i</sub> Takashimaya-de katta]<sub>j</sub>-no wa  
 you-Nom yesterday Takashimaya-at buy-Past C<sup>0</sup>-Top  
 [FocP t<sub>j</sub> nani<sub>i</sub> Foc<sup>0</sup> da/na no/desu ka] Top<sup>0</sup>]?  
 what is Cop/Cop+Q/Cop-Polite+Q

‘What is it that you bought at Takashimaya?’

Taroo answers to this question:

Taroo: Kono boosi da/desu.  
 this hat Cop/Cop-Polite

- b. On entering the classroom, Mr. Tanaka notices that the window was broken during the break and says to his students,

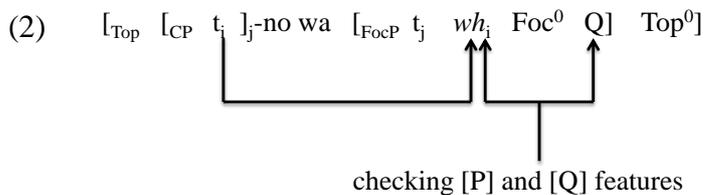
Taroo: [TopP [CP t<sub>i</sub> kono mado-o wat-ta]<sub>j</sub>-no wa  
 this window-Acc break-Past C<sup>0</sup>-Top  
 [FocP t<sub>j</sub> dare<sub>i</sub> (to) Foc<sup>0</sup> da/na no/desu ka] Top<sup>0</sup>]?  
 who Cop/ Cop+Q/Cop-Polite+Q  
 Who is it that broke this window?’

One of his student replies to him:

Student: Boku da/desu.

I Cop/Cop-Polite

Matsuya (2011:162-163)



Matsuya (2011:163)

Taking the biclausal structure of English *wh*-cleft sentences, which is demonstrated in (3), into consideration, Matsuya (2013) attempts to revise (2), which is monoclausal, in order to make the derivation process more universal.

- (3) Who is it that hit you?

Matsuya (2013:1134)

Grohmann, Panagiotidis, and Tsipplakou (2006) have dealt with *wh*-clefts in Cypriot Greek such as (4a), to which informants invariably assign a D-linked interpretation, and suggest that it is produced through the numeration (4b) (see Chomsky (1995)) and the course of derivation (4c): N is exhausted through successive Select, Merge, and Move (see Hornstein, Nunes, and Grohmann (2005)) and *pcos* ‘who’ moves sideward, merges with the small clause (SC) predicate  $\emptyset$  for checking  $\theta$ -role, and moves to SpecCP of the cleft for checking [*wh*] feature.

(4) a. *Pcos embu efie?*

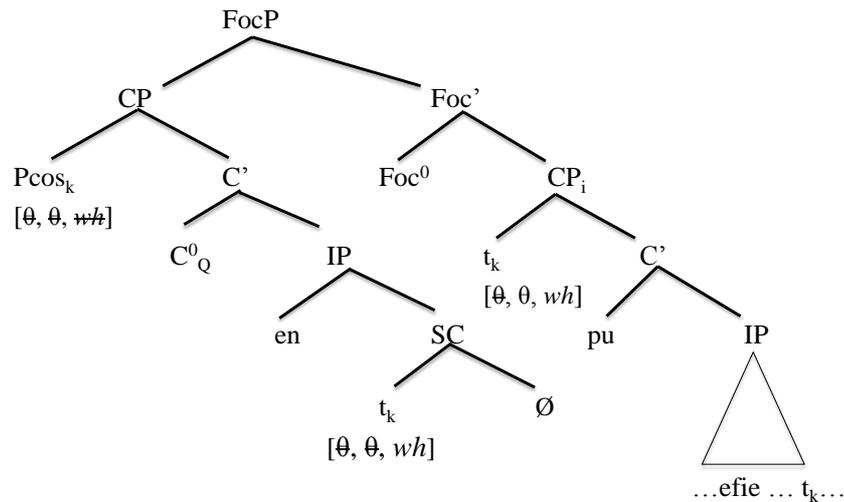
Who-NOM is-that left-3SG

Lit.: ‘Who is it that left?’

b.  $N = \{efie, v^0, pcos, I^0_{[PAST]}, pu \text{ [(=non-interrogative complementizer)]},$

$Foc^0, \emptyset, en \text{ [(= present-tense inflectional head } I^0_{[PRES]}], C^0_Q\}$

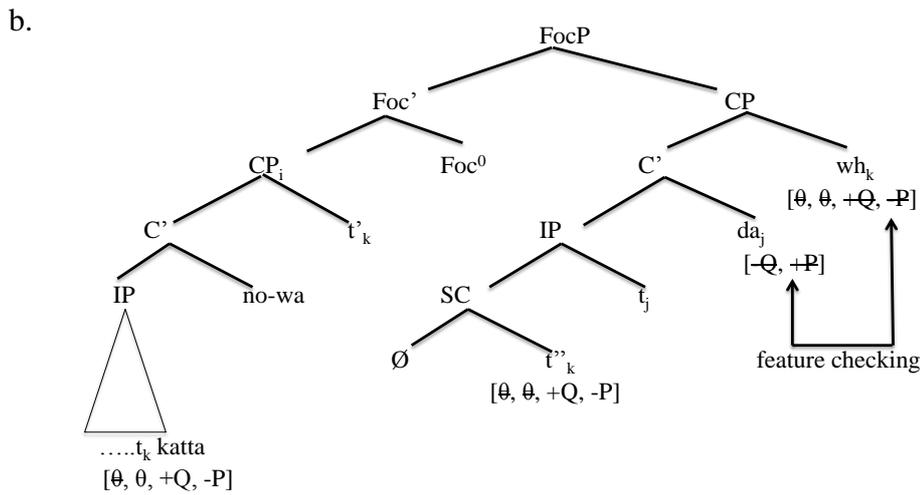
c.



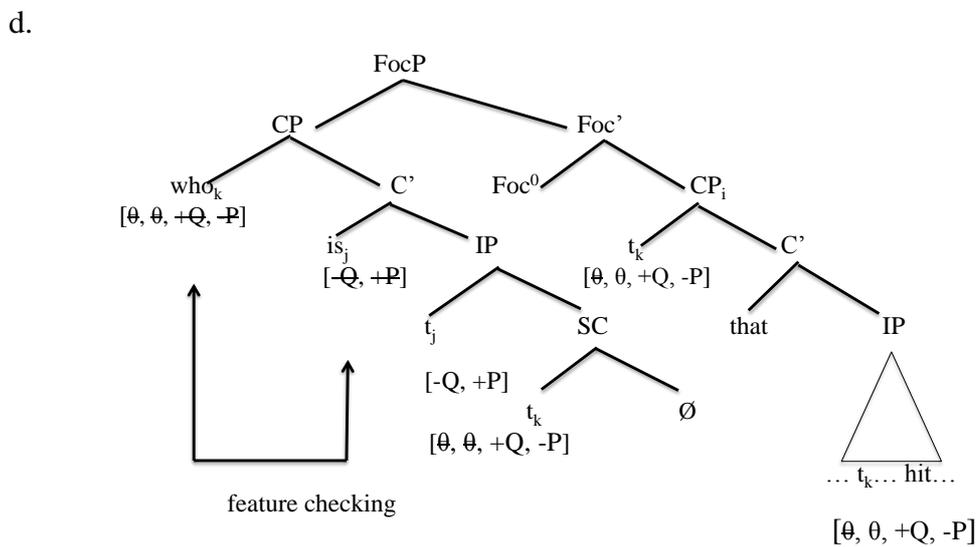
Grohmann, Panagiotidis, and Tsipplakou (2006:91)

Under the assumption that C (= Q-marker) contains a [-Q] feature and a [+P] feature and that a *wh* phrase has a [+Q] feature and a [-P] feature, Matsuya (2013) tries to apply Grohmann, Panagiotidis, and Tsipplakou’s (2006) derivation process to English and Japanese *wh*-cleft examples and proposes (5b) and (5d) for (5a) and (5c), respectively. Notice that as in (5b) and (5d), copulas with [-Q] and [+P] overtly move to CP head of the cleft, which is different from Grohmann, Panagiotidis, and Tsipplakou (2006).

- (5) a. Kimi-ga kinoo Takashimaya-de katta-no wa  
 you-Nom yesterday Takashimaya-at buy-Past C<sup>0</sup>-Top  
 nani<sub>i</sub> Foc<sup>0</sup> da/na no/desu ka?  
 what is Cop/Cop+Q/Cop-Polite+Q  
 ‘What is it that you bought at Takashimaya?’



- c. Who is it that hit you?



### 3. Analysis of Corpus Data

The results of CHILDES search for the production of *wh*-cleft sentences and cleft sentences by Japanese children are summarized as follows.<sup>2</sup> Among 21 kinds of corpus database with respect to Japanese children, I observed the stage when children started to produce *wh*-cleft and cleft sentences. As (6a) shows, seven of 10 participant children produce both of them, while 3 subject kids utter only cleft sentence, although their parents and acquaintances tried to talk to them, using *wh*-clefts as well as clefts in everyday conversation quite frequently.<sup>4</sup>

#### (6) a. The Search Results of CHILDES

	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
<i>Wh</i> -cleft sentence	—	—	✓	✓	✓	✓	—	✓	✓	✓
Cleft sentence	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

#### b. Names of Corpus

- |                     |                         |
|---------------------|-------------------------|
| (i) Ishii           | (ii) MillPro/ArikaM     |
| (iii) MillPro/Asato | (iv) MillPro/NJD Nanami |
| (v) MillPro/Tomito  | (vi) Miyata/Aki         |
| (vii) Miyata/Ryo    | (viii) Miyata/Tai       |
| (ix) Noji           | (x) Okayama             |

In addition, notice that the average ages at which children started to utter these two types of sentences are different from each other: the average age of the production of cleft sentences is 4 month earlier than that of *wh*-cleft sentences.

#### (7) Average Age When Subjects Produce Each Construction

- |                              |         |
|------------------------------|---------|
| a. <i>wh</i> -cleft sentence | 3;01.24 |
| b. cleft sentence            | 2;9.14  |

(8) and (9) describe examples of *wh*-cleft and cleft sentences produced by children of the 10 databases above.<sup>3</sup> Compare the age at which each construction was uttered by children for the first time. Except for the cases of MillPro/Asato and Noji, children

produced cleft sentences earlier than *wh*-cleft ones; the child of MillPro/Asato said the latter only one month earlier than the former and the child of Noji produced them at about the same time.

(8) Examples of *wh*-cleft Sentences

- a. APR: hai unten shuru [: suru] no wa da:re da ?  
 %trn: co:i|hai n:vn|unten v:ir:sub|su-PRES ptl:snr|no ptl:top|wa  
 n:deic:wh|darev:cop|da&PRES ?  
 [funo (= ship-Obj) unten suru nowa dare da?]  
 ‘Who is it that sails the ship?’  
 (3;03.27, female) (MillPro/ArikaM “aprim19990909.cha”)
- b. ALS: marui no wa doko da ?  
 %trn: adj|maru-PRES ptl:snr|no ptl:top|wa n:deic:wh|doko v:cop|da&PRES ?  
 ‘Where is it that the round one is?’  
 (3;1.19, male) (MillPro/Asato “als19990805.cha”)
- c. NJD: anata ga daisuki na no wa nan desu ka tte itte !  
 %trn: n:deic:prs|anata ptl:case|ga dai#n:an|suki v:cop|da&PRES:na  
 ptl:snr|no ptl:top|wa n:deic:wh|nani v:cop|da&POL-PRES ptl:final|ka  
 ptl:quot|tte v:c|iwiw-IMP:te=say !  
 ‘Say “What is it that you like very much?”!’  
 (4;0.09, female) (MillPro/NJD Nanami “20000624.cha”)
- d. TOM: nande shiroi no (w)a tsukanai no [?] ?  
 %trn: adv:deic:wh|nande adj|shiro-PRES ptl:snr|no ptl:top|wa  
 v:c|tsuk-NEG-PRES=attach ptl:final|no ?  
 ‘Why is it that white one does not stick to others?’  
 (3;0.28, male) (MillPro /Tomito “tom19990629”)
- e. TAI: areq aburu no wa doko ?  
 %xtrn: co:i|areq v:c|abur-PRES ptl:snr|no ptl:top|wa n:deic:wh|doko ?  
 ‘Where is it that that thing to fan is?’  
 (2;2.27, male) (Miyata/Tai “t940707.cha”)

f. SUM: kora ochichi nonderu no wa dare ja .

[hey breast taking GEN TOP who]

‘Hey, who is it that taking the breast?’

(2;5, male) (Noji “205.cha”)

g. CHI: reen@q to iu no wa nani ?

[lane is said GEN TOP what]

‘What is it that is called a lane?’

(3:10, male) (Okayama “083-3.10-M.cha”)

(9) Examples of Cleft Sentences

a. CHI: un, kore ya, maasu no wa kore ya .

[yes this is turn -GEN -TOP this is-COP]

‘Yes, this is. It is this that I turn.’

(2;11.25, male) (Ishii “21125.cha”)

b. APR: datte (.) kore atatte ii no wa [?] koko .

%trn: conj|datte n:deic:dem|kore v:c|atar-CONN=hit adj|i-PRES ptl:snr|no  
ptl:top|wa n:deic:dem|koko .

‘Because it is here that you may hit.’

(3;0.02, female) (MillPro/ArikaM “aprm19990515.cha”)

c. ALS: koedo ni noru no wa kore desu .

%trn: n|koedo=train ptl:case|ni v:c|nor-PRES ptl:snr|no ptl:top|wa  
n:deic:dem|kore v:cop|da&POL-PRES .

‘It is this that get on Koedo Special Express.’

(3;2.21, male) (MillPro/Asato “19990907.cha”)

d. NJD: ato wa Juri no wa kore .

%trn: n|ato=after ptl:top|wa n:prop|Juri ptl:case|no ptl:top|wa  
n:deic:dem|kore .

‘Then, it is this that is Juri’s.’

(3;6.09, female) (MillPro/NJDNanami “njd19991224.cha”)

- e. TOM: aq kotchi no wa konna chitch(ai) .  
 %xtrn: co:i|aq n:deic:dem|kotchi ptl:case|no ptl:top|wa adn:deic:dem|konna  
 adj:mot|chitcha-PRES .  
 ‘It is so small that that one is.’  
 (3;0.13, male) (MillPro/Tomito “tom19990614”)
- f. CHI: Ootoochan no wa kore .  
 %trn: n:prop|Ootoochan=HON\_Father\_FAM ptl:attr|no=GEN ptl:top|wa=TOP  
 n:deic:dem|kore=this .  
 %gpx: pointing big bowl  
 ‘It is this (bowl) that Father’s is.’  
 (2;6.15, male) (Miyata/Aki “aki20615.cha”)
- g. CHI: aoi no wa kotchi .  
 %xtrn: adj|ao-PRES=blue ptl:snr|no ptl:top|wa=TOP  
 n:deic:dem|kotchi=here .  
 ‘It is here that blue one is.’  
 (2;05.22, male) (Miyata/Ryo “r20522.cha”)
- h. TAI: chuushajoo no [?] wa (.) kotchi kedo (.) &ko [//]  
 %xtrn: n|chuushajoo ptl:case|no ptl:top|wa n:deic:dem|kotchi ptl:conj|kedo  
 chuushajoo no [\*]chuushajoo .  
 n|chuushajoo ptl:case|no n|chuushajoo .  
 ‘It is here that a parking lot is, but a parking lot, a parking lot.’  
 (2;1.16, male) (Miyata/Tai “t940526.cha”)
- i. SUM: chadanki xxx no wa ikenai.  
 [crossing gate GEN (wataru (= cross) GEN TOP bad]  
 ‘It is bad that crossing the crossing gate is.’  
 (2;5, male) (Noji “205.cha”)
- j. CHI: guchagucha [//] Tetchan no wa guchagucha .  
 [messy Tetchan GEN TOP messy]  
 ‘Messy. It is messy that Tetchan’s is.’  
 (2;6, male) (Okayama “010-2.6-M.cha”)

Judging from these three pieces of evidence, it can be said that Japanese children tend to produce cleft sentences earlier than *wh*-cleft sentences.

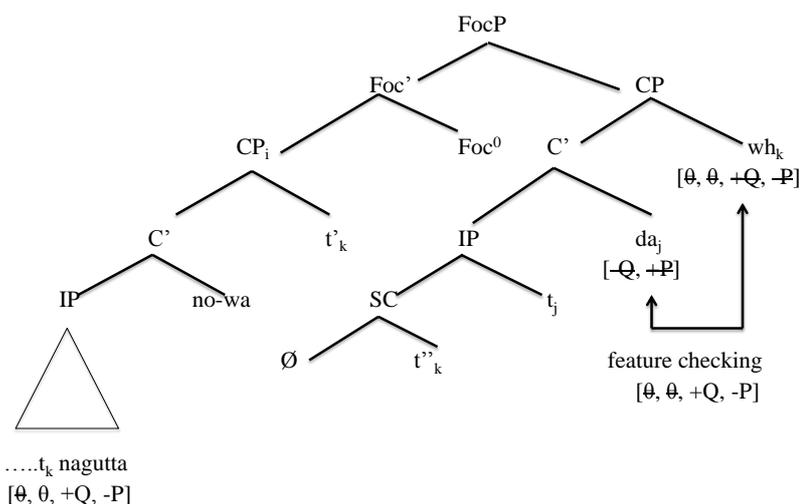
#### 4. Discussion

Why is there a temporal difference in the acquisition of these two types of sentences as observed above? How can we explain this fact from the perspective of formal linguistics? There may be two possibilities that can account for it. One is that Q-feature checking between a *wh*-phrase and copular, *da*, in the CP directly dominated by Focus Phrase is difficult in the early stage of language acquisition. Consider the following examples. As Figure (10-b) shows, *wh* phrase, *dare* in the case of (10a), moves to the Spec of the higher CP in order to check the Q-feature with the copular, *da*, which is not necessary in the derivational process of cleft sentence (10c). See Figure (10d). That is, the feature checking of cleft sentences is less costly than that of *wh*-cleft ones. The other is that the CP, which is directly dominated by the Focus Phrase, is absent in the child language of the early stage. So Q-feature checking is not done, which blocks *wh*-clefts.

(10) a. *wh*-cleft sentence

Kimi-o nagutta no wa dare da?  
 You-ACC hit-PAST C<sup>0</sup>-TOP who Cop  
 ‘Who is it that hit you?’

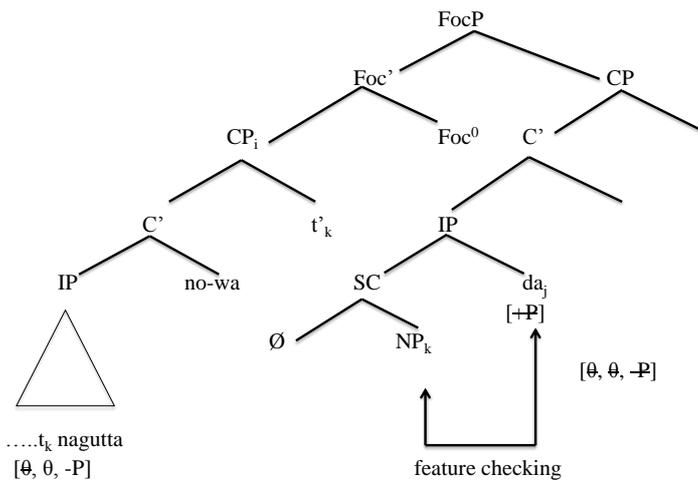
b.



c. cleft sentence

Hanako-o nagutta no wa Masao da.  
 Hanako-ACC hit-PAST C<sup>0</sup>-TOP Masao Cop  
 ‘It is Masao that hit Hanako.’

d.



## 5. Summary

The findings of this study are as follows. First, there is a time lag between the acquisition of *wh*-cleft sentences and cleft sentences by Japanese children. Second, the delay of the production of *wh*-clefts can be attributed to the difficulty of Q-feature checking at the higher CP, which is costly in the derivation. In the case of cleft sentences without Q-feature checking, all features, e.g. P-feature, theta role, and so forth, are checked under the analysis of a Small Clause, which is lower than the CP directly dominated by Focus Phrase for Q-feature checking in the clausal architecture. Third, the CP dominated by the Focus Phrase might be absent in the child language of the early stage.

## Notes

\* I would like to express my gratitude to Patricia Hironymous, who discussed this topic together, and Fred Savarese, who proofread this paper and gave me helpful suggestions.

1. As for the details of overt *wh*-movement in Old Japanese, see Watanabe (2002).
2. This paper does not deal with the *wh*-cleft sentences where *wh* phrases are ellipsed.
3. All of *wh*-cleft sentences are uttered by children in situations, such as picture book reading and pretend play, where they shared the same topic and information with parents and someone around them. Thus they did not contain rhetorical meaning.
4. Referring to the context, I supplemented some phonologically-unrealized words into the samples and translated them into English.

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## **TITLE PAGE**

**TITLE OF THE ARTICLE:** FOSTERING AN INTERCOURSE BETWEEN DEMOCRACY AND EDUCATION: TOWARDS A RECALIBRATION OF PHILOSOPHY AND POLICY ON EDUCATION IN NIGERIA

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# FOSTERING AN INTERCOURSE BETWEEN DEMOCRACY AND EDUCATION: TOWARDS A RECALIBRATION OF PHILOSOPHY AND POLICY ON EDUCATION IN NIGERIA

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## ABSTRACT

*Enthroning democracy in Nigeria appears to be a difficult project. Since independence and even after the fourth republic, rather than practice democracy, our leaders have always resorted back to either militocracy, mobocracy or totalitarianism. This is not because our socio-political nature is antithetical to freedom, fairness and justice, but because such principles are not reflected in the kind of education used to nurture Nigerians, especially their leaders. They are trained by the authoritarian teacher in a military-like classroom through a regimented and dictatorial curriculum. It takes only miracles to produce democrats from such environment. This paper thus argues that if Nigeria is really serious in becoming a free and democratic society, as reflected in her official documents, then its philosophy, policy and system of education would have to be re-patterned to give room for the usual relationship between a nation's ideology and the education system which is meant to achieve such ideology. This means that to achieve democracy in Nigeria, education needs to be democratized.*

**Key words:** Democracy, Education, Educational Policy, Egalitarianism, Elitism and Curriculum.

## INTRODUCTION

Experts have established in various works that the custom and the way of life of a people determine the kind of education given to the inhabitants of a particular community. Dewey, for instance, posits that education is a social function, securing direction and development in the immature through their participation in the life of the group to which they belong, and to that extent, education will vary with the quality of life which prevails in a group. He goes further to say that a society which not only changes but which has the ideal of such change as will improve it, will have different standards and methods of education from one which aims simply at the perpetuation of its own custom (Dewey1916:104).

This Deweyan position is, however, not new; it is a recapitulation of Platonic conception of education and society; and others like Russell, Pestalozzi, Froebel, Comenius, Comte, Durkheim, Peters, *et cetera*, in their various works. They all agree that any education given by a

group tends to socialize its members, but the quality and value of the socialization depends upon the habits and aims of the group. This means that a society which is authoritarian or democratic will generate a mode of socialization that corresponds to the former or latter. In the same vein, if a society is socialistic or capitalistic, the educational system will either be patterned after socialism or capitalism; but on varieties of associations, democracy is currently preferred as the best mode in any form of human interaction. Democracy, in the general parlance, is a form of government. It is a rule by the people, for the people and of the people {Kennedian axiom}. This definition, commonly celebrated, imposes only a political connotation on democracy. In Dewey, however, the term receives a wider attention. Democracy, for him, is...

more than a form of government; it is primarily a mode of associated living, of conjoint communicated experience. The extension in space of the number of individuals who participate in an interest so that each has to refer to his own action to that of others to give point and direction to his own, is equivalent to the breaking down of those barriers of class, race, and national territory which kept men from perceiving the full import of their activity. These more numerous and more varied points of contact denote a greater diversity of stimuli to which an individual has to respond; they consequently put a premium on variation in his action (Dewey1916: 111-112) .

Dewey's understanding of democracy is a mode of life which allows for consideration of varieties of interests, so that on the long run, the interest which is majorly considered to be the best is accepted and operated upon. This mode of life, incidentally, is not restricted to politics. It cuts across social, economic, moral, religious, family-life and all other facts of life. In Horne's opinion, democracy is an attitude of mind under which exploitation of man by man is abhorred; a way of life in which the human personality is judged as supreme and of measureless worth; an order of social relationship dedicated to the promotion of the individual and collective interest of common folk; a spirit of understanding, sympathy and cooperation; a spirit which envisages responsibility for every man; a belief in humanity; an attitude that values the rights of others as well as one's own; a conviction and determination to base every action on goodwill, fraternity and sense of responsibility; a society in which ordinary men and women may grow to their full

stature; a society of the people, by the people and for the people in which every individual finds his scope of development and self-expression according to his potentialities (Taneja 2001:240).

Democracy is thus infused into all aspects of life and it is the most logical form of living. Dewey uses the analogy of acorns to explain the necessity of democracy for human existence. In his opinion, acorns are many things at different times. What they become depends on the transactions they engage in. For instance, they become food when squirrels need and desire them for survival. When acorns, however, engage in harmonious transactions with soil, water, air, sunshine and other essential factors, they become oak trees. This analogy holds for human beings. Human beings need to engage in harmonious relationships or transactions, especially with fellow human beings, if they are to grow healthy and strong. This harmony is, ironically, reflected in pluralism and difference, which is the key to becoming an individual mind. In this case, we need others to enjoy freedom. A pluralistic democratic community which encourages dialogues in the midst of differences {varieties of opinions} best satisfies this need {that is, the need to become free}. Diversity provides alternatives, which in turn ensures freedom. There is a great need for intelligent deliberations upon all modes of life, even if we will, on the long run, reject those modes as incapable of meeting our present and peculiar needs. The danger in a society having narrow interests, instead of allowing for varieties of interests and their possibilities, is that the society faces the risk of being stagnant as it struggles with the protection of what it has got, instead of reorganization and progress through wider relationships. Democracy is, hence, the best form of association.

At this juncture, we need to quickly examine the relationship between democracy and education. The relationship between democracy and education is multifaceted. In the first place, Plato in his *Republic* and other socio-political philosophers, have demonstrated the necessity of education to political democracy. Such scholars concur with the popular maxim which says – ‘education makes it easy to lead the people, but difficult to cheat them’. Dewey specifically says;

...a government resting upon popular suffrage cannot be successful unless those who elect and obey their governors are educated. Since a democratic society repudiates the principle of external authority, it must find a substitute in voluntary disposition and interest; these can be created only by education (Dewey 1916:111-112).

Education, as it were, infuses the spirit of responsibility, duties and commitments to the development of the state in individuals. If a society is characterized with high dose of illiteracy,

governance becomes difficult, which could de-generate into despotism, militarism or something else.

In the second place, democracy provides the freedom needed for intellectual fertilization in education. This is how Dewey puts it;

Lack of the free and equitable intercourse which springs from a variety of shared interests makes intellectual stimulation unbalanced. Diversity of stimulation means novelty, and novelty means challenge to thought. The more activity is restricted to a few definite lines – as it is when there are rigid class lines’ preventing adequate interplay of experiences – the more action tends to become routine on the part of the class at a disadvantage, and capricious, aimless, and explosive on the part of the class having the materially fortunate position (Dewey 1916:108).

Through the freedom provided by democracy, fertile conversation or communication is promoted in education. Democracy is a social structure which permits the growth of the freedom of intelligence, and because of this, education ought to be democratic. Dewey says;

The object and reward of learning is continued capacity for growth. Now this idea cannot be applied to all the members of a society except where intercourse of man with man is natural, and except where there is adequate provision for the reconstruction of social habits and institutions by means of wide stimulation arising from equitably distributed interests. And this means a democratic society (Dewey 1916:122).

Thirdly, it is only an education which stresses conversation in diversity, multiple inquiries and a free democratic spirit, which best suits the citizens of a society which is continually evolving with emerging daily sophistications, complexities and constant changes. Dewey writes;

A society which is mobile, which is full of channels for the distribution of a change occurring anywhere, must see to it that its members are educated to personal initiative and adaptability. Otherwise, they will be overwhelmed by the changes in which they are caught and those

significance or connections they do not perceive. The result will be a confusion in which a few will appropriate to themselves the results of the blind and externally directed activities of others (Dewey 1916:112).

Again, and this is instructive, the school should be constituted in such a way that allows for the training of the young ones in specific and experimental thinking and assisting them to experience the need for democratic cooperation. This suggestion was one of the findings generated from Chicago school laboratory's experiment. Although these results had been earlier expressed by the German scholar, Friedrich Froebel {the originator of kindergarten school}; they are summarized as follow;

- that the primary business of the school is to train children in cooperative and mutually helpful living;
- that individual tendencies and activities of the young are organized and directed through the uses made of them in keeping up the cooperative living already spoken of, taking advantage of them to reproduce on the child's plane the typical doings and occupations of the larger, mature society into which he is finally to go forth; and that it is through productive and creative use that valuable knowledge is secured and clinched (Curtis & Boulwood 1965:466).

By and large, a democratic arrangement is the best form of association in any social interaction, and the school is the hatching or breeding ground for this kind of arrangement. In Taneja, one finds a synopsis on the relationship between democracy and education as thus;

Democracy cannot be thought of in isolation from education. Infact, democracy is the result of education. Unless the principles of democracy are reflected in the aims and ideals of education, curriculum, methods of teaching, administration and organization, in discipline, in the outlook of the teacher, democracy cannot grow. If democracy can catch roots anywhere, it is in the school, which is a very rich and fertile field for its growth and development (Taneja 2001:244).

By and large, our contention so far is that whatever conception we have of democracy, it needs education. Education contributes to the necessary forms of understanding which assist the public in the attempt to learn to perceive, think, feel, imagine, desire, choose and act in a way that is fully and distinctively human (Crittenden 1973:136). If all these forms of understanding

are needed for the survival of a democracy, and if they can only be supplied by education – formal or informal, then one could conclude with Omotoso and Aladejana that education is a *sine qua non* in a democracy (Omotoso & Aladejana 2003:7-8).

Nigeria, however, proclaims in her various documents (Nigeria's Constitution and the National Policy on Education) that she wishes to become a democratic and egalitarian nation. If she is indeed serious with achieving a democratic society, then it needs to take her education seriously. Again, such education must be democratized. This means that education and democracy have to be infused into each other. Kneller has pointed out that the conduct of education in a democracy is guided by a number of generally accepted principles. These principles are regarded as the cornerstones of education and democracy; they are;

- i. since the people elect their government, they should be educated to do so responsibly
- ii. through education, every individual is expected to develop his own talents to the full
- iii. men must be educated to be free
- iv. education should train the open mind
- v. education should develop the habit of productive cooperation as well as healthy competition
- vi. wherever possible, we should adopt democratic practices in school behaviour; and
- vii. political control over education must be kept to the minimum (Kneller in Omotoso & Aladejana 2003:6).

A critical reflection on Nigeria's policy-document on education shows that it is far-away from adopting the above general principles. The system of education propelled by the policy, and anchored by a philosophy, is a total disconnection from democratic principles. This disconnect falls in right description in Counts' observation as follows;

We say that our children should be trained for life in a democracy and then we place them in schools which are autocratically managed from the board of education to the pupil in the classroom; we say that our children should learn the lessons of cooperation and then we subject them to an educational regimen of marks, certificates and degrees which place a premium upon individual competition and self-aggrandizement; we say that our children should be taught to love music and literature and then place them in learning situations which engender feelings of distaste and boredom (Counts in Lucas 1969:93).

The enthronement of democracy in Nigeria could have been much more easier but for undemocratisation of education. If people are to elect their government freely, then they should be educated to do so responsibly. In the same vein, an egalitarian society could have been easier to realise, if there were no structures that favour elitism in the policy. The system for instance, creates rooms for special schools populated by ‘special citizens’ and ‘special treatment’ for some favoured regions in the name of equalizing educational opportunities. These special schools, as noted by Nduka, are designed to serve the elites, and are head and shoulders above the general run of institutions of the same educational level which serve the great mass of citizens. The special schools, in his opinion, serve the role of reinforcing the educational advantages, which the children from the favoured homes have over those from the less favoured ones, especially as regards initiation into various aspects of western culture. On the long run, the schools play the role of widening the educational and cultural gap together with the concomitant economic advantages between the children of the western educated elite and their less fortunate fellow citizens (Nduka 2006: 126-127). Of course, neither the practice of autocracy nor the creation of ‘sacred cows’ can produce a democratic and egalitarian society. The result at best is a capitalistic or elitist society.

From the foregoing, it is obvious that democracy is difficult to achieve if education is not democratized. It is however golden to say that an education which instills the spirit of competition *in lieu* of habitual cooperation; an education that preaches individualism in place of mutually helpful living; an education that ridicules challenges in diversities of voices, and embraces monotony instead; an education that allows the autocratic administrators rule bureaucratically in our schools; an education that tolerates the autocratic teacher in a cemetery-type of classroom with passive, deaf and dump learners; an education that features teacher-centred and subject-centred curriculum {instead of child-centred} without any involvement of the learners in designing such curriculum; an education that is not readily accessible and affordable to the common man, but is made a special reserve of the privileged-class who use it to perpetuate themselves in power; an education which hinders the spirit of exploration but promotes conformism in the learner – can never and will never be able to produce a democratic society. This is the rationale behind the submission that unless the principles of democracy are reflected in the aims and ideals of education, curriculum, methods of teaching; administration and organization, in discipline, in the atmosphere of the school and in the outlook of the teacher,

democracy cannot grow (Taneja 2001:244). Thus, education would have to be completely democratized in Nigeria if indeed we are serious at achieving a democratic society “founded on the principles of freedom, equality and justice”(FRN in NPE 2004:1). This will entail the removal of all encumbrances to democratic ideals in our educational system.

It is clearly shown on page one of the National Policy on Education that Nigeria wishes to build a democratic and egalitarian society; and that she wishes to achieve this through education as an instrument. Such education is expected to promote self realization and better human relationship; individual and national efficiency; effective citizenship; national consciousness and unity; social, cultural, economic, political, scientific and technological progress (FRN in NPE 2004:1-2); but as we have argued earlier, education would have been able to achieve all these if it were democratized. A democratized education will expose the child to basic democratic principles such as justice; fair-play; freedom of expression, of worship, of association. Amaele understands this argument when he affirms that democracy cannot be attained, well enough, in the wider society if it is not practiced in the nation’s education; educational institutions are the human factories where all the societal theories are manufactured and tested (Amaele 2005:85). Taneja equally agrees with Amaele as he insists that “if democracy will catch roots anywhere, it is in the school which is a very rich and fertile field for its growth and development” (Taneja 2001:244). So, Nigerian educational system must be democratized to achieve a democratic society. To kick start this process, education will first and foremost, be made available, accessible and highly affordable, if not free, to all and sundry. This condition is highly pertinent because as noted by Olarewaju, there is no way we can have a full democratic society in a nation where we have many illiterates. The people who cannot make a rational decision that affect their own lives cannot be called upon to make decisions that affect the life of society; they cannot make such decisions because they lack the rational information on which they could base their decision upon (Olawaju 2009:38). And then, it is proposed that the curriculum at all levels must feature learning experiences that will predispose the principles of democracy in the educand. Akinpelu suggests the inclusion of civic education, political education, moral education and so on, as ways of inculcating democratic attitudes in the learners; or alternatively, he recommends the participation of all constituencies of education {parents, teachers, students and the community} in the organization and administration of education (Akinpelu 2005:185). While we agree with Akinpelu on the inclusion of the afore-mentioned

courses and participation in school management, we contend that the subjects-contents in the entire curriculum should be arranged in such a way that the child is exposed to the meaning of unity in diversity and the principles of harmonious living in the society. Dewey recommends problem method because it fosters the spirit of cooperation or togetherness in the child; the Nigerian teacher should constantly adopt this method and/or any other method which fosters cooperation *in lieu* of competition.

## CONCLUSION

By and large, we argued in this paper that Nigerian education needs to be democratized, and it shall be seen as democratized when the following happen;

- When education is seen and operated as a right and not a privilege, and consequently made available, accessible and highly affordable, if not free.
- When curriculum features subjects which are capable of fostering the spirit of democracy in the child.
- When learners are made to be part and parcel of the process of curricular design, planning and implementation, which will create a room for child-centred curriculum.
- When learners are encouraged to practice democracy in their various students' associations; and when they are given opportunities to go on field trips visiting places where democratic institutions are solidly entrenched.
- When all stakeholders in education have 'a say' and 'a way' in the planning and execution of education in Nigeria.
- When educational administrators especially at the primary and secondary levels are encouraged to drop the habits of being autocratic or despotic, and instead, embrace the spirit of democracy in educational affairs.
- When educational posts {e.g. vice-chancellor, principal, head teachers, zonal education officers, etc} are not imposed by external bodies, but instead, decided on the basis of merits and collective choice of the people affected.

All these factors, and others not mentioned here, must be taken into serious consideration if we truly need a democratic society. In a similar vein, Nigerian society is expected to be egalitarian through education; but with what type of education? We have argued earlier, that

rather than have an education which fosters equal rights and fairness, what we have in place is elitism at its apogee. An instance is the institution of unity schools, which harbour some selected children from all over the states in the country, under the guise of uniting the nation. These schools, rather than unite, further expand the gap between the privileged and non-privileged, who in turn ensures the perpetuation of their children in the process that produced them. This situation prompted Olarewaju to ask the following questions: “if we aim to build an egalitarian society, why are we selecting few children among all the children in the society for such prestigious education?; why are we working against what we aim to build?; what are the purposes of these elitist schools?” (Olawaju 2009:41). Perhaps, Fafunwa is right in saying;

The problem that is created by unity schools will continue until all the 5,000 secondary schools in Nigeria become unity schools.... Either you convert all the Nigerian schools to unity schools or you ban them (Fafunwa in Akinkugbe 1994:105).

If Nigeria is to be an egalitarian and a democratic society, then, it “must part company with the present elitist system of education which cannot, because it was never intended to, mobilize the great mass of the citizens and gear them for rapid development” (Nduka 2006:127). In other words, education should not allow special treatments for special children; Nigerian education must be egalitarian and democratic.

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1. **PART**icipation: Student Participation in Arts Education and Graduation Rate

Improvement in Los Angeles Unified School District

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Student Participation in Arts Education and Graduation Rate Improvement in

Los Angeles Unified School District

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Student Participation in Arts Education and Graduation Rate Improvement in  
Los Angeles Unified School District

**Executive Summary**

In Los Angeles Unified School District, only 65% of the students graduated high school in 2012 (Lim, 2011-12 Graduation and dropout rates, 2013). That leaves 35% of the potential graduating seniors without a high school diploma. A high school diploma is socially accepted as the gateway to college and career, and these students are being left behind without the means to progress in meaningful careers. Most of the students who do not graduate are minority children who live in high poverty neighborhoods (Lim, 2011-12 Graduation and dropout rates, 2013). Without certification of having met the basic educational standards of the American school system, these poverty stricken minority children will be stuck perpetuating the poverty cycle that exists in their neighborhoods and in their schools. Not only is this detrimental to the children, but as a society, we are also losing potential human capital and a voting, tax paying citizenship. For many students, the symptoms of dropping out of high school can be understood by the pulled out/pushed out model (Bradley & Renzulli, 2011). Bradley and Renzulli (2011) suggest that students are pulled out by family needs, economic obligation, or personal commitments; on the contrary, students are pushed out by discipline issues, dislike of classes or teachers, absenteeism, and student conflict. The core of both models is lack of student engagement. Measures currently in place to retain students are after disengagement occurs and provide a disincentive for students to attend school. The proposed solution is to offer arts education programs as a form of engagement for students. Although there is no causal relationship between arts education and graduation

rates, there is ample evidence in other minority majority urban centers to suggest arts education is a positive alternative that may yield successful results.

The purpose of this policy brief is to draw attention to the abysmal graduation rates in Los Angeles Unified School District (LAUSD) and provide policy options related to arts education that may improve graduation rates. The organization of this paper: 1) establishes low graduation rates as a significant problem to society, 2) provides research-based symptoms of student dropouts, 3) explores policy options to address the problem of dropping out, 4) examines arts education as a possible policy to improve student engagement, 5) proposes that LAUSD implement a program similar to the Arts Ecosystem established by The Hewlett Foundation using the current LAUSD Arts and Education Plan.

## **Context and Importance of the Problem**

### **Description of the problem**

The problem addressed in this policy brief is the low graduation rate of high school students in Los Angeles Unified School District (LAUSD). The politically charged phrase for this problem is the dropout rate; however, the dropout rate is defined differently in a variety of studies and the numbers range from 14.4% (Torlakson, 2012) to 52% (Silver, Saunders, & Zarate, 2008) depending on the context of the information. In addition, in 2009 the California data on dropout rates were adjusted making the aggregate state data not available. A more reliable number for analysis is the graduation rate, which for the 2011-2012 academic year was 65% in LAUSD (Lim, 2011-12 Graduation and dropout rates, 2013). The operational definition of graduation rate for this paper is the rate which cohorts of students graduated high school in four years. Although the

graduation rate in LAUSD has been steadily improving from 48% in 2007-2008, the California graduation rate has been in decline from 80% in 2007-2008 to 78.5% in 2011-2012 (Lim, Graduation and dropout rates, 2011). It is important to focus on LAUSD within the context of California because it is the state's largest school district. There are 6,217,002 students enrolled in California public schools; 667, 251 of those students attend schools in LAUSD (California Department of Education, 2012). The enrollment of one district makes up 10% of California schools. The next largest district is San Diego Unified with an enrollment of 131, 784 (California Department of Education, 2012). Table 1 (below) shows the graduation rate percentages of LAUSD and California over a five-year period from 2007 to 2012.

Table 1

*Graduation Rates by Year*

	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
LAUSD	48%	52%	55%	62%	65%
California	80%	79%	Not Available	77%	78.5%

*Note.* Adapted from Lim (2012, 2013).

The students who drop out of high school are typically minorities who come from low socioeconomic status (SES) conditions (Rumberger, 1987). In LAUSD, the graduation percentages for whites (72%) and Asians (78%) is higher than African-Americans (56%) and Latinos (65%), but the state-wide data reveals a much greater disparity of whites (86%) and Asians (91%) with African-Americans (66%) and Latinos (73%) (Lim, 2012; Lim, 2013). The student race/ethnic population of LAUSD is: African-American (9.6%), Latino (72%), Asian (4%), and white (10%) (California

Department of Education, 2013). The percentage of students in LAUSD who are low SES is 79% (California Department of Education, 2013). Students are considered low SES if they qualify for the Free and Reduced Meal Program (FRMP). Only 68% of low SES students graduate in LAUSD, and only 73% of low SES students graduate in California (Education Data Partnership, 2013). Table 2 (below) presents a comparison of the LAUSD and California graduation rates disaggregated by sub-group for the 2011-2012 academic year.

Table 2

*Graduation Rates by Ethnicity and SES*

	LAUSD 2011-2012	California 2011-2012
African-Americans	56%	66%
Latinos	65%	73%
Whites	72%	86%
Asians	78%	91%
Low SES	68%	73%

*Note.* Adapted from Education Data Partnership (2013)

**Context of the problem**

Students drop out of high school for myriad reasons. In a prescient study by Rumberger (1987), six factors are given for dropping out: demographics, family-related, peers, school-related, economic, and individual reasons. More recently, Lee and Burkam (2003) separate three factors to predict dropouts: students’ social background, students’ academic background, and school demographics. The President’s Committee on Arts and the Humanities (2011) cites two studies suggesting why students drop out of high school. The first study, Bridgeland, et al. (2006) reports students are bored and uninspired, classes are not interesting, and expectations of them are low (President's Committee on the Arts and the Humanities, May 2011). The second study, Pytel (2008) uses the Child

Trends Databank to demonstrate that as early as sixth grade students who exhibit excessive absences, low levels of engagement, failing grades, and disruptive behavior are at risk of dropping out (President's Committee on the Arts and the Humanities, May 2011). A theoretical framework created by Bradley & Renzulli (2011) synthesizes the previous studies. The pushed-out/pulled-out theoretical model (Bradley & Renzulli, 2011) combines the factors that push students out of school: dislike school, disagreement between teachers/students, discipline, not safe, no sense of belonging, academic failure, and absenteeism. A controversial component of the pushed-out theory is “oppositional culture” proposed by Ogbu (1987), cited in Bradley and Renzulli (2011), suggests that African-Americans and Latinos come from cultures that do not conform to the academic structure and organization of schools. This theory is not supported by current research. The factors that pull students out of school are also defined: employment, pregnancy, parenthood, family member needs/support, and marriage (Bradley & Renzulli, 2011). The pulled-out model is an opportunity-cost evaluation for most students. The trends that emerge from the research are students are more likely to drop out if they are minorities, low SES, poor social networks, lack of participation in extra-curricular activities, low GPA, family background, and cultural differences (Bradley & Renzulli, 2011). These trends describe students in urban school districts, like LAUSD, which have very low graduation rates.

### **Policy and other implications of the problem**

It is imperative that all students graduate from high school. Students who drop out are limited in their employment options and will not be able to move out of poverty. They are likely to stay in low SES neighborhoods, and their children will attend urban schools

with low graduation rates. To supplement their inadequate income, many turn to crime and end up in the prison system. Other high school dropouts turn to drug use and also end up in prison. The taxpayer money spent on the dropouts once they are in the court system could be better spent preventing children's early downfall by investing in the students' successful completion of high school graduation requirements. In addition, there is low voter turnout among high school dropouts. The limited human capital stunts society from progressing. Students are not able to access opportunities, like career trajectory, that become available with a high school diploma. This also yields fewer tax dollars that contribute to social programs and government needs. Subsequently, high school dropouts tend to be more dependent on government programs. The potential of these students to contribute to society, to eradicate the poverty cycle, to change the world, hinges on their ability to graduate from high school.

### **Policy Options to Address the Problem**

#### **Description of various policy options**

There are numerous ways districts have tried to improve graduation rates. Students have been required to take remedial classes to improve their GPA, non-profit organizations work with schools to offer enrichment courses after school, on weekends, and during summer to help the students academically. Truancy officers are hired to find students in the community who are not attending classes. Security officers are hired to keep students safe and monitor students on campus. All of these solutions are embedded with a disincentive for the students. Interventions either take time away from positive social activities or financial and emotional family obligations. Or, interventions pose a threat to the students with truancy consequences or disciplinary action on campus.

Interventions are put in place after the problem occurs. These options are not effective for students struggling to stay in school as evidenced by the current drop out rate. In considering the reasons students drop out of school, many of the students in the pushed out model can be encouraged with opportunities for student engagement. Engagement can be in the form of sports, clubs, and arts. Engagement activities may not be as effective for students in the pulled out model because they leave as a result of opportunity cost. It is more costly for them to attend school than it is for them to drop out. The engagement activity must be greater than the opportunity or obligation outside of school. Either way, the low graduation rates need to be improved through policy that demonstrates a commitment to meeting the academic and personal needs of students at risk for dropping out.

### **Empirical evidence related to the effectiveness of the policy options**

LAUSD is taking an innovative approach to improve the graduation rate and other challenges facing the district by making a commitment to arts education. In 2013, LAUSD created the Arts and Education Plan (Los Angeles Unified School District, 2013). The goal of this program is to bring arts into the core instruction over the next ten years (Los Angeles Unified School District, 2013). The plan to integrate the arts includes professional development, sample lessons online, salary-point incentives for teachers to include arts instruction, and partnerships with local non-profit organizations. Funding, however, is not guaranteed over time.

There are six dominant organizations involved in the LAUSD Arts and Education Plan. First, the LAUSD Arts and Education branch is funded by LAUSD (Los Angeles Unified School District, 2013). Second, The LA Fund is a philanthropic organization

initiated in 2011 by Superintendent John Deasy and philanthropist Megan Chermin (The Los Angeles Fund for Public Education, 2011). This fund is not specific to arts education, but it does focus on innovation and results-driven programs. Third, Arts at the Core is a program sponsored by College Board that pairs teaching artists with classroom teachers to design cross-disciplinary hands-on arts instruction (College Board, 2011). Fourth, Arts for All is a non-profit organization that works to establish a strong arts foundation and partners with schools to implement and restore the arts (Arts for All). Districts must join Arts for All and the organization provides coaching, artists in the classroom, and professional development for teachers. Fifth, Arts for LA is a non-profit organization that developed a policy framework for arts education, a cultural economy, and civic engagement (Arts for LA, 2012). It does not specifically work with schools, but it does provide afterschool programs and summer programs in regions of Los Angeles. Sixth, Friends of the Arts in LAUSD has been the organization dedicated to maintaining the arts in LAUSD (Friends of the Arts in LAUSD, 2012). For the last ten years, Friends of the Arts has been an active arts advocacy group in LAUSD; however, the organization was reduced to one person in 2012. A Save the Arts campaign is underway. These programs are working with LAUSD to bring arts to the students; there is not an explicit arts program to improve graduation rates.

Implementation of arts programs is not unique to LAUSD. A study by Israel (2009) in New York City considered relationships between access to the arts and graduation rates. In 2008, the graduation rate was 56%, and the demographics of student graduates were similar to LAUSD: Latino (49%), African-American (51%), White (72%), and Asian (74%) (NYC Department of Education, 2013). Three significant

findings emerged from this study: 1) Students at risk of dropping out cite participation in the arts as their reason for staying in school; 2) Arts education has a measurable impact on at-risk youth; 3) In New York City public schools, students with the least access to arts instruction have the lowest graduation rates (Israel, 2009). The NYC Department of Education (2013) reports that 65.5% of NYC students graduated in 2012. Although this improvement cannot be directly linked to the arts programs, there is a research based positive relationship between the two variables.

Missouri is another state where research has been conducted on the relationship between student academic behaviors and arts education. Although the demographics in Missouri are different from those in the urban centers of New York City and Los Angeles, the large cities in Missouri have significant minority populations. In Jackson, 42% of the students identify as non-white; St. Louis, 37%; St. Louis City, 66.5% (The Annie E. Casey Foundation, 2013). Scheuler (2010) found a positive relationship between participation and fine arts education and attendance and student behavior. In addition, Scheuler (2010) reports a positive relationship between fine arts education and student academic performance. Most importantly, Scheuler (2010) found a positive relationship between fine arts education and graduation rates. In both cases of New York and Missouri, the recommendations from the studies included maintenance and expansion of the current arts programs (Israel, 2009; Scheuler, 2010).

Not only are individual states implementing arts programs, but arts education is also coming to the national forefront. In 2011, President Barack Obama established a Committee on the Arts and the Humanities. The objective of the committee is investing in arts education through collaboration, developing arts integration, expanding current

arts programs, reinforcing the arts through policy, widening focus on evidence supporting arts education (President's Committee on the Arts and the Humanities, May 2011). In the report *Reinvesting in Arts Education*, the literature supporting arts education is vast. In *Champions of Change* by Fiske (1999), seven correlative studies show the pattern of linkage between higher levels of arts participation and higher grades and test scores in math and reading (President's Committee on the Arts and the Humanities, May 2011). In the *Champions of Change* report, Fiske (1999) concluded that arts integration approaches were successful in producing better attendance and fewer discipline problems, increased graduation rates, and improved test scores. An unsurprising conclusion by Catterall (1999, 2009) found that data from National Educational Longitudinal Survey (NELS) showed that students with economic advantage had more arts experiences (President's Committee on the Arts and the Humanities, May 2011). Students with high involvement in the arts, including minority and low-income students, performed better in school and stayed in school longer than students with low involvement, the relative advantage increasing over the years (President's Committee on the Arts and the Humanities, May 2011). In follow-up research, two findings emerge: 1) arts-engaged low-income students are more likely than their non-arts-engaged peers to have attended and done well in college, obtained employment with a future, volunteered in their communities and participated in the political process by voting; 2) arts-engaged low income students tend to perform more like average higher-income students (Catterall, Dumais, & Hampden-Thompson, 2012). In *Critical Links: Learning in the Arts and Student Academic and Social Development*, Deasy (2002) compiled 62 studies that revealed a transfer of skills from the arts to other subjects, in addition to habits of mind, self-motivation, social skills,

tolerance, empathy, and positive peer interaction. Similarly, McLaughlin (2000) reported that when low-income youth participated in arts programs, they were more likely to be high academic achievers, be elected to class office, and participate in math or science fair (President's Committee on the Arts and the Humanities, May 2011). In addition, Israel (2009) found that students who experience success in arts appreciate the results of effort and persistence, and are more motivated to apply themselves to other learning tasks. As a by-product of another study, Heath (1998) found that students who were involved in arts education for at least nine hours a week were four times more likely to have high academic achievement and three times more likely to have high attendance (President's Committee on the Arts and the Humanities, May 2011).

California leadership has also made a commitment to the arts. When Governor Jerry Brown was mayor of Oakland, he created the Oakland School for the Arts, which is now a top performing school in an urban district (Jerry Brown Governor 2010, 2010). Creating magnet schools and theme schools were a part of his education plan in 2010 when he became Governor of California. Improving high school graduation rates was also part of his plan. Based on the research, both objectives can be met by implementing a strong arts program in LAUSD.

The Hewlett Foundation has established an arts ecosystem, which is a thriving collaboration of arts integration in the San Francisco Bay Area (The William and Flora Hewlett Foundation, 2013). At the top of the ecosystem are foundations and government that fund the programs. In the middle are schools and for-profit entertainment that use the funding for arts education. At the bottom are artists and the public who work in the schools or entertainment houses and become the paying audiences for the art

performances. Through taxes, for-profit groups return money to the government. The schools produce productive members of the public, many of whom donate to the foundations and support the artists. In this model, the six agents of arts education work together for mutually beneficial results.

### **Analysis and Recommendations**

#### **Key actors and levels in addressing the problem**

The key actors in the arts ecosystem are listed in Table 3 (below). The specific groups that could be utilized in the arts ecosystem are listed in the second column. How each actor will function within the arts ecosystem is in the third column. The fourth column lists possible benefits to each actor after participating in the arts ecosystem. The table shows how the arts ecosystem can be mutually beneficial to all actors involved.

Table 3

*Agents of the Arts Ecosystem, their Function and Benefits*

<b>Agents</b>	<b>Specific Groups</b>	<b>Function in arts ecosystem</b>	<b>Benefit</b>
Foundations	LA Fund	Funding Accountability	Philanthropy Tax incentives
Government	Los Angeles California State	Funding Data reporting Accountability Provide tax incentives to Foundations and For profit entertainment	Improved graduation rates Model for other urban centers Political leverage
Non-Profits	Arts at the Core Arts for All Arts for LA Friends of the Arts	Provide artists Collaborate with teachers Present to students Organize activities (afterschool, summer)	Funding Research support Employment Venue to pursue mission/goals Train youth
Schools	LAUSD K-12	Provide students, teachers, classroom space, and facilitate experiences Identify and monitor at-risk students	Improved graduation rates Higher attendance

		Allow students to be interviewed for research purposes on perception and engagement Commit to arts education	Fewer discipline issues Student engagement Community involvement
For profit entertainment	Center Theatre Group	Organize student performances Discount (or free) student tickets Talk back after performances Bridge performances to curriculum Provide lesson plans for teacher to use before/after production Invite student interns and/or ushers	Audiences Student workers Tax incentives
Artists	Various	Perform at schools Teach students Collaborate with teachers Incorporate curriculum goals	Performance Mentorship Paycheck
Community	Los Angeles County	Attend arts programs and performances Donate to foundations Pay taxes	More graduates Better jobs Pay taxes Less crime Contribute to eradicating poverty cycle Donate to foundations

*Note.* Information collected from (The William and Flora Hewlett Foundation, 2013) and (Los Angeles Unified School District, 2013).

### **Recommendations**

Based on the symptoms of dropping out, the empirical evidence showing a positive relationship between arts education and graduation rates, and the commitment LAUSD has made to the arts, it is recommended that policy be implemented to secure an arts ecosystem in LAUSD modeled after the Hewlett Foundation Arts Ecosystem in the San Francisco Bay Area.

The suggested process of creating an arts ecosystem in LAUSD follows. First, identify foundations, such as the Hewlett Foundation, and secure funding for twelve

years. The first four years will follow one cohort of students. The first cohort will allow stakeholders in the eco system to identify challenges. The second cohort (years five through eight) will enable stakeholders to implement solutions to perceived challenges. The third cohort (years nine through twelve) will allow stakeholders to identify results. In particular, if and how graduation rates have changed since the ecosystem was put in place. Integral to the process will also be identification of unintended consequences not only at the school sites, but also in the community. Although the Hewlett Foundation limits grants to the Bay Area, other arts advocates in the Los Angeles area are likely to commit funding with tax incentives from government agencies. Los Angeles is one of the performing arts capitals of the world, not to mention a pocket of an egregious amount of wealth in Hollywood. There is a concentration of financial support in Los Angeles disproportionate to many other cities that have made a commitment to the arts, and a positive consequence of so much money is philanthropy. There is money available for a program such as this; it needs to be identified and secured.

The second step is to synthesize the programs offered by the current non-profit groups working with LAUSD. Identify clear responsibilities for each organization. Provide incentives through funding for meeting student graduation rate goals or student participation. Create accountability measures for each program and establish clear responsibility guidelines for each role involved in the ecosystem.

The third step is to hire researchers to monitor the effects of the programs on graduation rates and the factors associated with the pushed-out/pulled-out theoretical framework (Bradley & Renzulli, 2011). This research will include interviewing students about their social networks and participation in the programs, in addition to following the

data on graduation rates, minority demographics, academic standing, and SES. Research should include changes to each of the stakeholders from the inception of the program through the twelfth year. A final longitudinal study should include findings for each stakeholder and recommendations for how the ecosystem should be improved.

There are many advantages to implementing an arts ecosystem in LAUSD. Primarily, it is likely to encourage high school students in LAUSD to graduate. The low SES and minority populations who are at risk of dropping out generally do not have access to arts. Based on the literature, the positive consequences of arts programs include higher graduation rates, better attendance rates, and lower incidence of misbehavior. Since LAUSD is the largest district in California, it is likely to serve not only as a model for other California districts, but also for urban centers across the United States. If the arts ecosystem is created, as it is structured in San Francisco Bay Area, it may bridge the California arts community. The benefits would then expand to foundations, schools, for profit entertainment, local artists, and the public. Although the expansion of the program will likely benefit the LAUSD community and the state in a larger model, the focus should be on how we can create programs to help students succeed before an intervention is required.

Despite arts programs being included as a core subject in the *No Child Left Behind* policy, it is often the first program cut. Arts programs can be expensive. They require specialized teacher training and disposable materials. Unlike textbooks, art supplies cannot be used year after year. Another disadvantage of arts education is that the arts do not appeal to everyone. Many students are discouraged by the stigma or simply not interested. In this case, other programs like sports or clubs can have a similar effect

on student engagement. Arts education is not the only answer, but it is a viable answer. Since students are all very different, it logically follows that a variety of programs should be created to help all students graduate from high school.

### **Conclusion**

The problem is clear: too many high school students dropped out of LAUSD schools before they graduated from high school. Only 65% of students in LAUSD graduated high school in 2012 (Lim, 2011-12 Graduation and dropout rates, 2013). Most of these students are low SES, minority youth who are either pulled out or pushed out of academic programs (Bradley & Renzulli, 2011). Arts programs are not the only answer to the dropout problem, but they do address many of the symptoms that cause students to dropout. There is a wealth of literature supporting the relationship between student participation in arts programs and academic engagement. LAUSD is the largest district in California, and having an arts ecosystem in place may help the high poverty, minority population stay in school. Unlike many other student-centered programs, an arts ecosystem is mutually beneficial for all stakeholders. In addition, providing arts programs may help urban youth develop skills that will enhance their human capital. Considering many of the options students turn to when they drop out of school, the arts are a positive choice to keep students from dropping out.

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1. Arts Education as a Class Issue: Perception of availability and participation in visual and performing arts relative to academic achievement
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## Abstract

The purpose of this study is to examine high socioeconomic status (SES) students' perception of arts and education. The significance of this topic is explained by the depleting funding for arts education in low SES schools, the maintained or increased funding for arts programs in high SES schools, and the continued growth of the academic achievement gap between the low and high SES schools. The literature review establishes play as an early model for arts education. Cultural capital theory is presented to develop arts education as a class issue. The value of arts education is then emphasized through the research presented in the President's Commission on the Arts. The research questions drive the data in three categories: student perception of availability and value of arts programs, arts participation levels in a high SES school, and student perception of and arts integration in core classes. The method was to survey a small sample (n=85) of students, grades 9-12, at a high performing, high SES school in Los Angeles County. The survey included 25-questions exploring the nuances of the research questions in addition to student demographics. The results indicate the literature in this field is supported. The students report access to the arts and disagree that the arts are cost prohibitive. All of the students participate in the arts at home and at school. There is a relationship between students who like the arts and students who like school. Students reported that all academic core classes integrate the arts in some way. The school has an API of 938 (out of 1000), so although there is no causal evidence linking arts education to academic achievement there are striking connections between arts participation and academic achievement.



**A. Title of Submission**

Exploring Middle School Mathematics Teachers' Beliefs in a Professional Development Project

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## **Introduction and Background**

In light of the Common Core State Standards initiative (2010), meaningful teacher professional development has become an urgent and paramount focus for teacher educators as they grapple with implementing these standards and practices. The Arizona Mathematics Partnership (AMP) Project, a five-year research-based professional development program for middle school mathematics teachers, is a strategic response to the need for increasing teachers' knowledge of and proficiency with implementing the standards in their classroom practices. Through this project, we have begun to explore the degree to which teachers embrace (or not) the philosophies and new ways of thinking about mathematics that are promoted by AMP. This paper details preliminary findings from a qualitative analysis in grounded research regarding teachers' beliefs about the teaching and learning of mathematics.

The AMP project provides professional development for teachers through three primary activities: Summer Institute (35 hours), Saturday Workshops during the academic year (30 hours), and Collaborative Community of Learners (CCOL, 30 hours). Project leaders help teachers identify essential mathematical ideas and empower them to move away from the “mile wide but inch deep” approach by emphasizing the coherence of related ideas, concepts, skills and procedures that form the foundation for understanding, thus preparing students for challenging courses. The Institutes and Workshops focus on content and students' thinking relative to problem solving, number sense, proportional reasoning, additive and multiplicative reasoning, geometry, patterns/algebra, and probability and statistics. Teachers explore these ideas by engaging first in unpacking the meaning of the mathematics and then through group discussions intended to deepen their content knowledge, pedagogical content knowledge, and problem solving behaviors. Each school-based CCOL, comprised of 4-8 peer teachers, is facilitated by highly trained community college faculty and serves as a connecting link between the Institutes/Workshop activities and teachers' experiences in the classroom. Each CCOL group determines their mathematical and pedagogical focus for the academic year through an environment for open discussion, exploring mathematical content, reviewing assigned readings, and determining learning goals for future sessions. During CCOLs, teachers are encouraged to share successes and challenges with the ultimate goal of making their teaching practices public.

## **Teacher Beliefs and Attitudes**

The literature has long described how teachers' beliefs about mathematics influence their approach to teaching mathematics. Thompson (1984) showed that a teacher's approach to classroom practice was strongly linked to his or her view of mathematics. If a teacher believed that mathematics was an accumulation of facts, rules, and skills, then his or her instruction was likely to be quite procedural. In his synthesis of the research on beliefs, Pajares (1992) outlined key findings that had been substantiated by multiple studies. He explains that belief structures are acquired through cultural transmission, so it is common for teachers to teach in the same ways that they were taught. The cultural influence on teaching was also pointed out by Stigler and Hiebert (1999) in their comparison of teachers in the U.S., Japan and Germany. Kagan (1992), who also provided an overview of the literature on the influence of teacher beliefs on their practice, reported that after entering service, teachers continued to solve instructional problems by relying on their own beliefs and experiences, rather than by the principles of their teacher education. Other key findings outlined by Pajares (1992) were that beliefs about teaching are well established even before pre-service teachers go to college. The research also shows that belief change in adulthood is rare, and when it does occur, it is associated with a conversion from one authority to another, or with a Gestalt shift. In other words, any professional development program aimed at reforming teaching practice should expect that the change process is difficult and requires attention to changing the beliefs and preconceived images that the teachers hold.

## **Methodology**

The study consists of 59 teachers from seven school districts in the state of Arizona. The data for this study were collected by videotaping all 10 CCOL groups throughout the academic year for a total of 18 hours of video for each group. Video footage from CCOL meetings is the primary data set, although a few quotes are taken from video footage of Math Symposiums and Summer Institute presentations. Using a grounded theory perspective, three researchers carefully analyzed the videos' content, taking notes on teacher participation, behaviors that effected productive and non-productive discussions, and topics of conversation. The researchers met frequently to share initial observations and to refocus their research lens based on these observations.

## **Preliminary Results**

We identified two extreme categories of teachers regarding responses to the AMP Project. One category, a group of five teachers local to the same school district, was characterized as the most traditional, and resultantly did not fully embrace the philosophies of the AMP Project. There were three main characteristics of these teachers:

- Engaged minimally with little reflection
- Opposed AMP teaching philosophies
- Displayed negative attitudes

When presented with novel mathematical problems, these teachers often gave up quickly and relied on the solutions of others. This group commented that AMP teaching philosophies were not viable in their classrooms. During CCOL meetings, these teachers complained about the relevancy of Workshop and Institute activities to their classrooms. For example, one of the five told her CCOL facilitator after a Saturday Workshop, “I don’t get the point of them [the Workshop activities], except really making me feel stupid.” We categorized remarks such as these as evidence of resistant behavior, and thus categorized these teachers as Early Resisters (ERs).

The ER teachers will serve as a comparison case for the teachers at the other end of the spectrum, those who exhibited evidence of embracing project goals and ideals early in the process. We will call the second category of teachers Notable Early Embracers (NEEs). Eight teachers from six school districts were identified as NEEs. It is important to note that not all NEEs responded in the same way, but rather displayed at least one or more of the following characteristics:

- Made recruitment efforts for future cohorts and promoted AMP
- Contributed enthusiasm and positive attitudes
- Engaged reflectively
- Demonstrated immersion in AMP teaching philosophies

Some teachers made diligent efforts to encourage more mathematics educators in their schools and districts to participate in the AMP Project. We recognized other NEEs for their consistent positivity regarding challenges in the classroom while transitioning to the Common Core State Standards. They also displayed positive attitudes toward mathematical content development tasks during Institutes, Workshops, and CCOLs. Furthermore, regarding math content

development activities, many NEEs demonstrated reflective engagement, meaning they viewed tasks as problematic, not routine (Oehrtman et al., 2009). For example, one teacher mentioned she spent several days working on a single word problem; she made her own manipulatives to model the situation and also collaborated with family members. Finally, several teachers in this group professed significant shifts in their teaching practice to be more reflective of the mathematical practices promoted by the Common Core State Standards.

After characterizing the two categories we advanced our analysis by focusing on teachers' beliefs about the teaching and learning of mathematics. Specifically, we were interested to see if NEE teachers shared common beliefs that differed from the ER teachers. We found two contrasting conceptions of a successful math class between the NEEs and the ERs. The ERs believed that a teacher-centered, direct instruction, textbook-reliant classroom created the most successful learning environment for students. As a group, the NEEs did not display these same beliefs, and instead supported a more student-led, collaborative, discovery-based learning environment, using real-world problems to explore mathematical concepts. NEE teachers believed that having their own strong mathematical understanding was essential to classroom success. The following sections discuss our findings for each category of teachers.

### **Characterization of Early Resister (ER) Teachers' Beliefs**

The ERs appeared to hold the notion that direct instruction was preferred over having students discovering and creating their own meanings. When commenting about her experience solving math problems during an AMP Saturday Workshop session, Tara compared her AMP experience to her own students and stated that she would never expect them to be able to do something she had not explicitly taught them. When discussing students' ability to think about problems, Dee stated, "But our students have very raw talent right now, and by leaving them to their own ways of thinking, their own devices, we end up with things that don't look like math during math." One of Jan's students chose to convert decimals into fractions, and she shared that she told the student, "Whoa [sic], maybe we shouldn't have done it that way... The more you touch something, the more chances you'll make a mistake. Keep it simple." All of these remarks point toward beliefs associated with a traditional learning environment where the focus is not placed on student thinking and in-depth understanding.

### **Characterization of Notable Early Embracer (NEE) Teachers' Beliefs**

The NEEs envisioned a very contrasting mathematics classroom. To begin, they expressed the belief that a teacher's role is to facilitate as students spearhead their own learning. During a CCOL meeting, Ken told his colleagues, "With this conceptual piece, the kids are the ones that are modeling. The kids are the ones that are providing the feedback. The teacher is there to clarify, guide, and support them." On several occasions, Rob conveyed to his CCOL how he "sat back and listened for a while" as his students "discussed their own viewpoints back and forth." He also told the group, "I probably said maybe five sentences in maybe 30 minutes. I just said, okay, your turn, your turn. That's all I did." Similar to the discourse that Rob described, Rita said at a Math Symposium,

I kind of step aside and let them take over and it's incredible to see the students who wouldn't have ever talked. Now they have a chance to feel safe and share what they've learned, and you can see the confidence in them when they get to share.

As the teachers talked about their facilitator role, several stressed the importance of having students work together. Rob described a conversation with a student who asked if her answer was correct. He replied, "You need to learn to ask your partner first instead of just me." Collectively, NEE teachers seemed to believe that students assume an active role in their own learning while the teacher provides guidance.

Coinciding with the belief in student-led learning was the belief that creating a discovery-based environment supports student understanding. Students should explore mathematical concepts in their own way and need the freedom to solve a problem guided by their own thinking. Rob said,

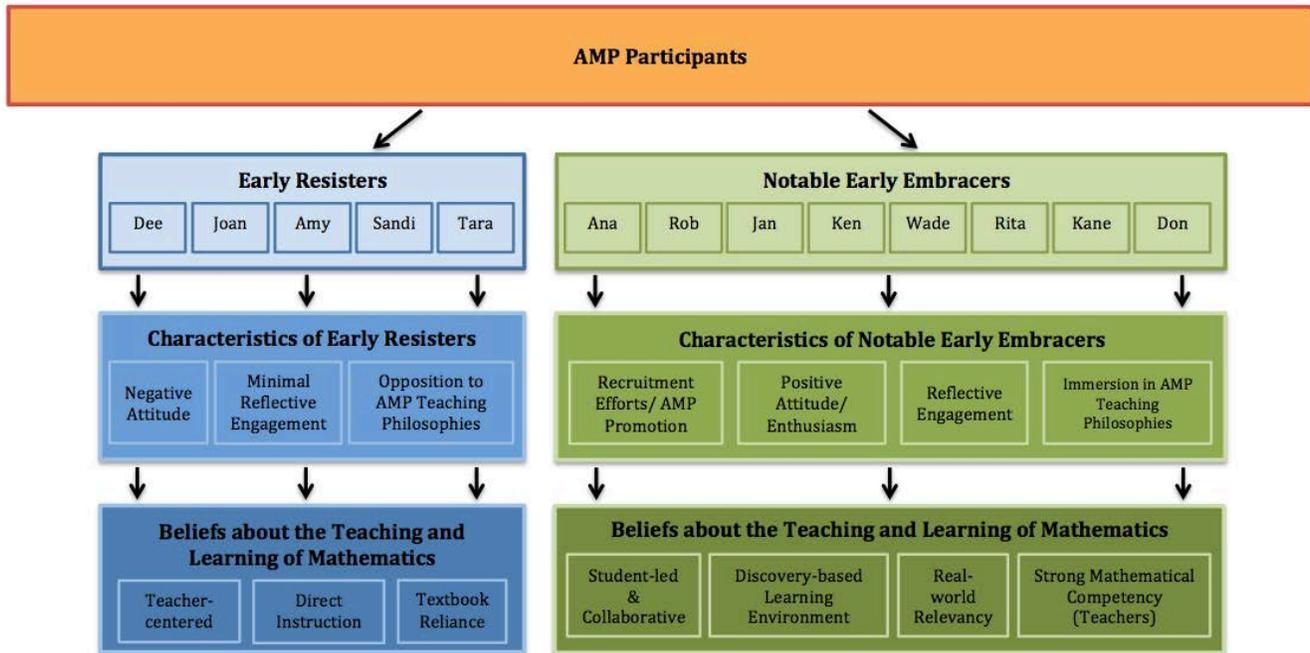
We're sitting here saying, do this, do this, do this. I call it... the recipe or cookbook style of mathematics where you have a recipe in front of you and you follow it. But for them to fully understand it, they're going to *have* to do it their own way.

During a Math Symposium, Rita displayed pictures of a student's solution and explanation to a multiplication problem, and commented, "[I] never would have thought of that myself, but these are the minds that we silence because it has to be the teacher's way... They're full of knowledge. You have to give them that chance to speak." This exemplifies the NEEs' belief that students can and need to approach a mathematical problem in a way that makes sense to them.

Another common belief that surfaced during research was that the teaching of mathematics must be relevant in students' lives outside of the classroom. The video data suggested that NEE teachers believed their students should know why learning a certain mathematics concept is important in their lives by "making it exciting for them. Mak[ing] it real." In fact, Wade stated, "Students are dying to make situations relevant when going through a traditional lesson." Wade spent his time "...looking for relevant word problems rather than planning Power Points," because "Word problems are not something specific to teach, rather they are your tool to teach your content." For example, Ken explained two real-world applications, "This week we used Ferris wheels to find least common multiple. We used cicadas, the lifecycles of cicadas to figure out the least common multiple." NEEs appeared to believe that even complex or abstract ideas could be illustrated in ways that students can connect the mathematical concepts to real life situations.

The NEEs recognized that the vision of a student-led, collaborative, discovery-based classroom was only feasible if they themselves had the strong mathematical understanding to facilitate student learning. Sometimes NEE teachers explicitly expressed this belief, and at other times they exemplified the belief through sharing teaching practice examples. Ana noted, "My understanding of the mathematics [is important] if I start teaching something...[and if] I don't have a full understanding of it, how are my kids supposed to have a full understanding of it?" Wade noted that if students did not provide convincing arguments to support their understanding of math concepts, he did not give them credit for their solutions. Rita pressed her students for more information, "...[the students] are now to, not just give me an answer, but to tell me why." These teachers believed in having a strong mathematical understanding themselves in order to consider the validity of students' mathematical arguments apart from textbook solutions and scripts. NEE teachers relied on their belief in a strong mathematical background as an undercurrent that supports their students' global mathematics classroom experience.

We recognize there are more than two categories of teachers, however, for the purposes of this paper, we solely analyzed Early Resisters and Notable Early Embracers. The diagram below summarizes the ER and NEE teacher construct.



## Conclusion

While analyzing the video data of teachers' discussions in the CCOL sessions, two opposing categories of teachers surfaced, those who resisted the need for changing their practices (ERs) and those who embraced mathematical practices promoted by the AMP Project (NEEs). The ERs were characterized by negative attitudes, minimal reflective engagement, and opposition to AMP teaching philosophies. The group of Early Resisters shared beliefs centered on a more traditional learning environment. The NEEs were characterized by recruitment efforts and AMP promotion, positive attitudes, reflective engagement, and immersion in AMP teaching philosophies. The NEEs appeared to share beliefs centered on student-led learning, discovery-based and collaborative work, and real-world relevancy. They also placed importance on their own mathematical competency. Future research will investigate the validity of the initial findings from this study.

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Title: Shaping OurSpace: A Multidisciplinary Approach for Developing Spatial Reasoning

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## Abstract

### Shaping OurSpace: A Multidisciplinary Approach for Developing Spatial Reasoning

The Housing Authority of a large southern metropolitan area was preparing to demolish and rebuild a low-income housing complex into a mixed use and mixed income development. When looking for ways to engage children in the learning process, a common pedagogical approach involves finding ways to connect the material taught to the child's lived experience. So, we, a multidisciplinary team of researchers from a local university, including an urban geographer and thespian, capitalized on this coming change by using it as an "in context" basis for developing spatial reasoning tasks for youth.

The thinking behind Shaping OurSpace was that spatial reasoning, though difficult for some (Linn & Peterson, 1985; McGillicuddy-De Lisi & De Lisi, 2002; Law, Pellegrino & Hunt, 1993), might arise more naturally when using tasks that are inherently engaging and/or meaningful. Because spatial reasoning is not often tapped into in young people (Snow, 1999; Wai, et al., 2009), we also felt the activities for the program might allow the children to demonstrate strengths in ways that are not always tapped into in schools. We worked with 2 groups of youth for this project: a small group of low-income young girls ranging in ages from 6-14 that were participating in a summer program located at the housing complex and a small group of African American children from a variety of different income backgrounds participating in an elementary after-school program, with the school being one of the neighborhood schools for the housing complex. The project started in the summer of 2012 and wrapped up in the spring of 2013.

The research questions we pursued and are pursuing are how did this process unfold? How did the urban geographer and thespian tap into their discipline specific views of spatial reasoning to shape the tasks? What changed for them as the process unfolded? To address these questions, the teaching sessions were observed and video-recorded. Interviews were also conducted and analyzed. A final data source were reflective writings by the urban geographer and the thespian.

The project captured and capitalized on spatial reasoning that is discipline specific. So, a key task involved understanding and coalescing around a definition for spatial reasoning. The community planning process used by the urban geographer and the theatre process used by the thespian cultivated ways of viewing space that become more symbiotic over time and built upon each other. At the same time, there were also unique foci that helped frame unique ways of working with and thinking about space, including the importance of relational space. The activities also emphasized "grounding" the children, with grounding being specific to the discipline. Because time was of an issue, the community planner and thespian had to be flexible and exploratory in the design of the tasks to best meet their overall goals.

Implications for the study will address how their work can help articulate approaches to teaching and developing spatial reasoning in young children.

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**Title of Proposal:**

An Investigation of Mathematics Teacher Professional Development Focused on Multiplicative Reasoning

**Topic Area of Submission**

Mathematics Education

**Presentation Format:**

Paper Session (Research Paper)

**Presentation Description:**

Professional development for teachers is often focused on pedagogy, rather than providing opportunities to build deep understandings of mathematics. Research has shown that a powerful way for improving teaching practices is to engage teachers in meaningful activities that not only deepen their understanding, but also focus their lens on student thinking. This report presents initial findings of how PD focused on multiplicative reasoning can help improve teachers' content knowledge and influence their beliefs about teaching.

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## **Introduction**

Past professional development (PD) for teachers of mathematics has largely focused on providing teachers with strategies and methods for teaching. The teaching strategies promoted in many PD programs are typically not discipline-specific and lack a fundamental focus on mathematical content. Research has shown that a powerful way for improving the teaching and learning of mathematics is to engage teachers in meaningful activities that not only deepen their understanding and conceptual knowledge of the mathematics they teach, but also focus their lens on student thinking in the context of mathematics (Silverman & Thompson, 2008). Reflecting this focus, a research-based PD program was implemented with middle school mathematics teachers. A major emphasis of this program is to improve the teaching and learning of middle school mathematics by improving teachers' content knowledge and influencing their beliefs about teaching mathematics. More specifically, we believe that if the participating teachers develop meaningful ways of thinking about mathematics, develop a profound understanding of the fundamental mathematics that they teach, and develop strategies for effective problem solving, then these same teachers will be better prepared to engender these mathematical practices in the students that they teach (Ma, 1999).

In this report we intend to present some of our initial findings that demonstrate how a curriculum built upon a central mathematical theme – multiplicative reasoning – can help improve teachers' content knowledge and influence their beliefs about teaching mathematics. We will present preliminary evidence based on teacher surveys, observations and quantitative instruments that were implemented during 2012-2013 to support our claims.

### **Why Middle School Mathematics?**

Research has shown that middle school is the gateway to high school course taking and college enrollment (Hill, 2007). In particular, completion of Algebra II is strongly correlated with success in college as well as future earning potential (Adelman, 1999). Yet over recent years, school districts have repeatedly seen student mathematics performance rates decline from grade 4 to grade 8. If students do not succeed in middle school mathematics, they will not have the foundation necessary to succeed in Algebra and other challenging high school math courses (Evan, Gray, & Olchefshe, 2006). We therefore believe that students who possess a solid foundation in middle school mathematics are more likely to experience positive outcomes in high school mathematics, further preparing them for success in mathematics beyond high school.

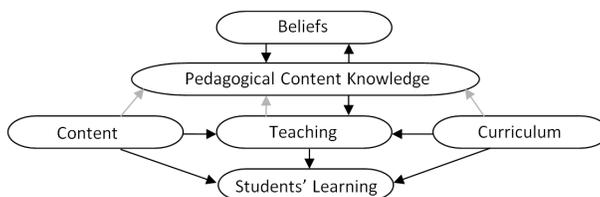
### **Theoretical Perspective**

Rooted in the theory of pragmatism, the core idea of conceptual field theory is that knowledge has many local facets that are molded and connected by mastering problems that are related conceptually (Vergnaud, 1994). One theory, in particular, that has captured the attention of mathematics education researchers is multiplicative conceptual field (MCF) theory, which addresses the ability to reason multiplicatively. Vergnaud argues that multiplicative reasoning plays a significant role in the development of conceptual understandings of multiplication, division, fractions, proportions, ratios, rates, rational numbers, and linear functions. It also serves as a gateway for building a mature understanding of exponential functions (Strom, 2008). Vergnaud refers to these topics as ingredients for the MCF which he defines as a complex theory that is “simultaneously a bulk of situations and a bulk of concepts” (p. 46) where concepts (tools for analyzing situations) become meaningful through situations (things that require multiplicative operations) and situations are analyzed through these multiple concepts. This reflexive

relationship between concepts and situations provides the basis of the conceptual field theory and serves as the mathematical foundation for this investigation with middle school teachers.

### Research and Implementation Framework

The framework for this study originates from the network of pedagogical content knowledge described by An, Kulm and Wu (2004, see Figure 1). An et al. integrate teacher beliefs and key student characteristics such as addressing student misconceptions and building on students' math ideas. The focus of this framework is *students' learning* from the viewpoint of teaching as a convergent process that “focuses on knowing students' thinking, which consists of 4 aspects: building on students' mathematical ideas, addressing students' misconceptions, engaging students in mathematics learning, and promoting students' thinking mathematically” (p. 148). This investigation builds teachers' pedagogical content knowledge by focusing on content and curriculum. Teachers collaborate to develop their mathematical knowledge, and they focus on understanding students' thinking while keeping students' prior knowledge in the forefront.

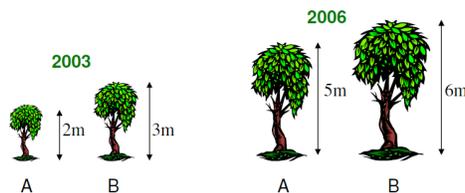


**Figure 1. Network of pedagogical content knowledge (abridged) (An et al., 2004).**

The primary research questions driving this study are: (a) In what ways does a teacher PD program grounded in MCF promote teachers' conceptual understanding of mathematics? (b) What effect does a curriculum focused on multiplicative reasoning have regarding teachers' beliefs about teaching mathematics?

### Multiplicative Concepts – A Sample Activity

As an example of the activities that are implemented in the PD program, consider the following situation of the Tree Problem (see Figure 2). Which tree grew more, Tree A or Tree B?



**Figure 2. The Tree Problem (Lamon, 2005).**

We have found that when teachers first encounter this problem, they feel as though the wording of the question is “vague.” Once we explain that this question can be answered in more than one way, they begin to consider the meaning of *more*. If teachers define *more* in the additive sense, they contend that neither tree grew more since each tree grew an additional 3 meters from 2003 to 2006. However, if teachers define *more* in the multiplicative sense, they can then think about Tree A as growing more since its height in 2006 is 2.5 times (or copies of) its height in 2003 while Tree B's height in 2006 is only 2 times (or copies of) its height in 2003. Another

important concept is the ability for teachers to be aware of the type of reasoning they engage in and to consciously choose to reason additively and/or multiplicatively based on the context of the problem. Opening teachers' minds to thinking multiplicatively allows them to expand how they compare quantities and operate on numbers. This ability to reason multiplicatively is an important component of the MCF underpinning K-12 mathematics.

### **Methodology**

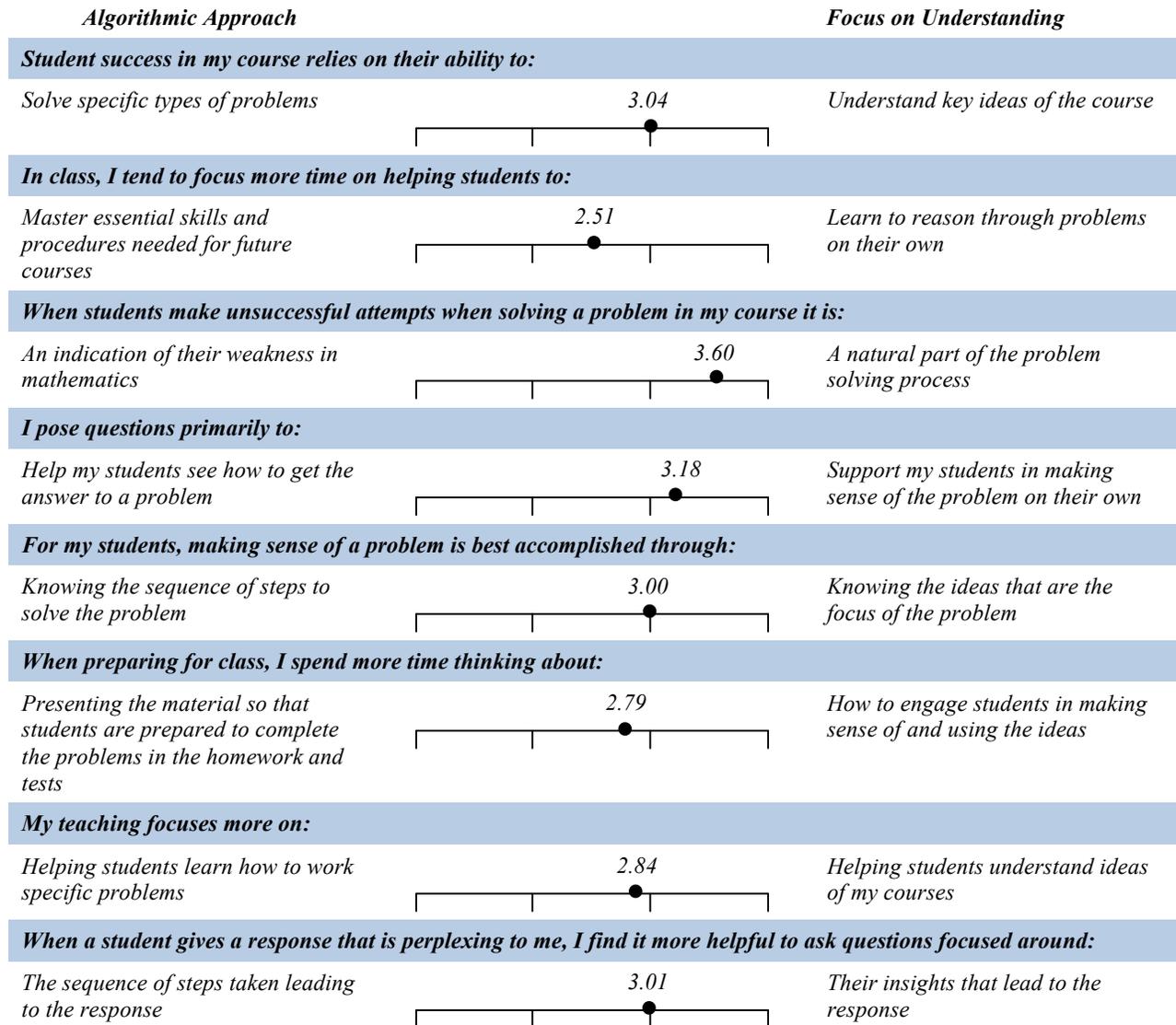
Sixty-seven middle school teachers from seven school districts were recruited to participate in the Arizona Mathematics Partnership (AMP) program, which focuses on increasing teachers' mathematical content knowledge during a one-week summer workshop, followed by four workshops over the school year. Teachers were given conceptually rich tasks designed to promote multiplicative thinking and meaning making. These workshops were augmented with school-based CCOLs (Collaborative Community of Learners) facilitated by project staff. The CCOLs met regularly throughout the school year and are designed to support teachers as they deepen their content knowledge and transform their beliefs relative to mathematics. Both quantitative and qualitative data has been collected and analyzed.

Prior to the PD workshops, we administered the Mathematical Knowledge for Teaching (MKT) Instrument developed by the Learning Mathematics for Teaching project (Learning Mathematics for Teaching, 2011) and an adaptation of the Views About Mathematics Survey (Carlson, Buskirk, & Halloun, 1999) to measure teachers' beliefs and attitudes towards mathematics and teaching mathematics. Teachers have also provided periodic reflections of their views on the changes they have implemented in the classroom as a result of their learning.

### **Preliminary Results**

An initial analysis of teachers' beliefs about mathematics and mathematics teaching was conducted from data gathered through the Views About Mathematics Survey. Eight of the survey items asked teachers to identify which of 2 statements they agreed with the most. Exhibit 1 shows the mean score and where that score falls on a continuum from 1 (*totally agree with the statement on the left*) to 4 (*totally agree with the statement on the right*). The statement on the left represents a traditional algorithmic approach to teaching mathematics (*1 rating*) whereas the statement on the right represents a focus on developing student understanding (*4 rating*). These items address the evaluation question "How have the teachers' belief systems changed as a result of the project?" The hypothesis was that if teachers participate in a professional development project focused on mathematics content, then their belief systems ratings will move toward the teaching for understanding side of the continuum over time. As shown in Exhibit 1, the teachers tended to choose the items on the teaching for understanding end of the continuum; however, in most cases there is room for further movement toward a focus on student understanding.

**Exhibit 1**  
**AMP Teachers' Beliefs About Mathematics Teaching**



Note.  $n = 67$ .

Researchers analyzed the responses to the belief items for differences between teachers who had high scores on the MKT assessment (i.e., answered 70% or more of the items correctly) and teachers who had lower scores (i.e., answered fewer than 70% of the items correctly). For this analysis, researchers translated each of the 8 belief items into 2 separate items using an agree/disagree scale. Exhibit 2 shows the items for which the mean difference between the 2 groups was 0.4 or higher.

**Exhibit 2**  
**AMP Teachers' Beliefs and MKT Assessment Scores**

Item	High	Low	Mean Difference
<b>Geometry</b>			
For my students, making sense of a problem is best accomplished through knowing the ideas that are the focus of the problem	3.37	2.85	0.52
My teaching focuses more on helping students understand ideas of my courses	3.16	2.71	0.45
My teaching focuses more on helping students learn how to work specific problems	1.84	2.29	-0.45
For my students, making sense of a problem is best accomplished through knowing the sequence of steps to solve the problem	1.63	2.15	-0.51
<b>Number Concepts and Operations</b>			
For my students, making sense of a problem is best accomplished through knowing the ideas that are the focus of the problem	3.43	2.77	0.66
Student success in my course relies on their ability to understand key ideas of the course	3.35	2.89	0.46
When a student gives a response that is perplexing to me, I find it more helpful to ask questions focused around their insights that lead to the response	3.35	2.84	0.51
My teaching focuses more on helping students understand ideas of my courses	3.22	2.64	0.58
Student success in my course relies on their ability to solve specific types of problems	1.65	2.11	-0.46
My teaching focuses more on helping students learn how to work specific problems	1.78	2.36	-0.58
When a student gives a response that is perplexing to me, I find it more helpful to ask questions focused around the sequence of steps taken leading to the response	1.65	2.16	-0.51
For my students, making sense of a problem is best accomplished through knowing the sequence of steps to solve the problem	1.57	2.23	-0.66

*Note.* Geometry high  $n = 19$ . Geometry low  $n = 48$ . Number concepts and operations high  $n = 23$ . Number concepts and operations low  $n = 44$ . Score scale: 1 (*strongly disagree*) to 4 (*strongly agree*).

The findings indicate that teachers who had lower scores on the MKT assessment were more likely to view the focus of mathematical instructional practices as helping students perform a series of steps (algorithmic approach), whereas teachers with high scores were more likely to view the focus as helping students develop a broader understanding of mathematical ideas (e.g., for my students, making sense of a problem is best accomplished through knowing the ideas that are the focus of the problem.).

Further analysis is being conducted to investigate the gains in teachers' understanding of the mathematics content promoted by the AMP program. This additional data and analysis will be shared during the presentation.

## **Discussion and Implications**

Initial results have also shown that teachers who scored high on the MKT (answers 70% or more of the questions correctly) view the role of mathematical instructional practices as helping students develop a broader understanding of mathematical ideas while teachers who scored poorly (answers less than 70% correctly) feel the focus should be helping students perform a series of steps. Since one of our goals is to help teachers reshape their practice around the Common Core Standards for Mathematics (NGA, 2010), we believe improving their content knowledge while reinforcing the Standards for Mathematical Practice will have an impact on their beliefs about mathematics teaching and thus influence their classroom practices.

By engaging the teachers in a curriculum of number sense, geometry/measurement, and problem solving tied together by the common theme of multiplicative reasoning we are helping them to develop deep, well-connected meanings of mathematics. Focusing on these big mathematical ideas facilitates teachers' development of a cohesive and flexible knowledge base for teaching mathematics. Early evidence suggests that teachers believe they have changed their teaching practices because of their increased content knowledge. The following excerpt provides insight into how one teachers' classroom practice has been modified:

*Teacher:* As part of the AMP program, in my classroom, I have used more task-oriented lessons and hands-on activities. Taking more effective prompts in my questioning of my students and allowing them to use their knowledge and not me give them the answers, but waiting for them to come up with them. I'm having more discussions on mathematics instead of just a lesson where they're doing all the work...showing ideas and reasoning – not mine – but the students' ideas and reasoning and discussing those.

Additional data from the post-test MKT and the VAMS survey adaptation in summer 2013 will be compared with pre-test data to determine potential shifts in teachers' beliefs and attitudes of mathematics relative to their conceptual shifts in mathematical content.

## **Acknowledgements**

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**12th Annual Hawaii International Conference on Education, January 5-8, 2014**  
**Proceedings Submission**  
**Submitted: August 9, 2013**

Title: Special Considerations in Counselling Post-Secondary Students

Topic Area: Counsellor Education

Presentation Format: Workshop

Description: There are specific challenges counselling students within a post-secondary environment that require a thorough comprehension of this population to best meet their needs. This workshop will address some of the concerns specific to this treatment population and present best-practice recommendations for therapy. Speaking from over 6 years experience providing post-secondary counselling, the author will include ideas born of individual experiences as a personal counsellor, the perspectives of colleagues and evidence-based research.

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## Special Considerations in Counselling Post-Secondary Students

Ariana Walstra, M.Ed., R. Psych.

### Abstract

There are specific challenges in counselling students within a post-secondary environment that require a thorough comprehension of this unique population. This workshop will address some of the concerns specific to this treatment population and present several of the best-practice recommendations for therapy. The workshop will begin with an introduction to the distinct nature of this population, including the change in scope of issues presented. The most commonly presented issues and concerns specific to post-secondary students will be discussed. The session will conclude with a discussion of effective therapeutic interventions, including rationale and examples. This workshop will be delivered from an experiential perspective, providing a fresh consideration of this unique population and allowing participants room for discussion and sharing of ideas.

1. Title of the submission: DEVELOPING NUMBER SENSE FLEXIBILITY: EFFECTIVENESS OF A TIER II SUMMER INTERVENTION PROGRAM

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6. Abstract and/or full paper.

DEVELOPING NUMBER SENSE FLEXIBILITY: EFFECTIVENESS OF A TIER II SUMMER INTERVENTION PROGRAM

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When Anita, a fifth grade student with mathematical learning difficulties, was asked to solve the mental math problem  $1000 - 998$ , she immediately grabbed paper and pencil, did the calculation, stared at her work a minute and then looked up with eyes that asked, “How could a problem with such big numbers have such a small answer?” In our work with Tier II tutoring, this scenario is a common occurrence. Anita without difficulty could count from 998 to 1000, could solve the problem doing the algorithm, but did not mentally recognize that 1000 and 998 was just two numbers apart. Students with mathematical learning difficulties often struggle with number sense (Shumway, 2011). An important aspect of number sense is the students’ ability to use numbers and operations in a flexible ways, including mental computation (Markovita & Sowder, 1994).

Research indicates that children have already intuitively developed many number sense strategies before coming to school (Clements & Sarama, 2009). However, because traditional instruction of the standard algorithms tends to encourage students to follow the procedures without thinking about the meaning of the computation (Markovita & Sowder, 1994;Varol & Farren, 2007). While learning the standard algorithm, students are typically not encouraged and often not allowed to use more efficient mental math strategies. Thus in the process of learning the algorithms, many students tend to stop thinking about numbers as quantities and instead think only about trying to recall the steps of the standard algorithm procedure (Shumway, 2001). Not thinking about the numbers as quantities limits students’ development of mathematical concepts. In a review of research studies, Varol and Farren (2007) concluded that teaching mental computation strategies encouraged students to make meaning of numbers, helped students to improve accuracy in computing and tended to bridge the gap between procedural and conceptual understanding.

Although a large body of knowledge is developing which addresses the issues of blending and developing both the mental math strategies and the standard algorithm in mathematics instruction, research pertaining to the development of middle school students with mathematical

learning difficulties' flexible use of number sense strategies is limited. The purpose of this study was to add to the literature by identifying the types of computation strategies used by middle school Tier II students and to implement and evaluate intervention promoting the students' development of number sense computation strategies.

## **Methods**

### **Research Design**

This project identified and described pre and post treatment differences in number sense strategies of rising 6<sup>th</sup> grade Tier II students who participated in a summer mathematics intervention program. The three research questions guiding this study were: 1) What number sense strategies do students with mathematical learning difficulties use when solving mental math questions? 2) What is the trajectory of learning number sense strategies for Tier II students participating in number sense intervention? And, 3) What are pre to post intervention gains in students' efficient use of number sense strategies?

### **Participants**

The participants in this study were 29 rising sixth grade students who were referred by their fifth grade teacher for a summer mathematics intervention program. Students from each of the six elementary schools of a Utah rural school district were invited to participate in eight tutoring sessions. Due to the limited duration of the intervention, teachers were instructed to refer their higher ability level Tier II students. Twenty-nine of the invited students participated in the intervention and 27 participated in both pre and post testing. Students attended an average of 6.9 tutoring sessions.

### **Procedure**

The individual tutoring sessions were conducted by the district math specialist and a university researcher, both which had over 25 years teaching experience. The eight sessions of one on one tutoring were conducted during two week periods at each of the six participating elementary schools. Sessions took place in the students' schools during summer vacation. Intervention sessions were 45 minutes in length and consisted of three phases. During the first 5-10 minutes of each session, students completed a daily number sense quiz. Phase II of each lesson was 10-20 minutes of number sense instruction in which one of six number sense strategies was introduced and practiced. The practice portion typically consisted of a string of problems which developed a number sense strategy and a game practicing the use of the strategy. Instruction in the first three sessions focused on the strategies of multiplying and dividing by 10's and estimation of double digit products. Instruction in the next three sessions focused on three compensation strategies used when adding and subtracting. In the seventh session students participated in a game reviewing the intervention concepts taught and the post assessment was administered to the participants during the eighth session. In the third phase of each session

instruction focused on the individual instructional needs of each student identified in pre intervention diagnostic testing. Twenty-one students were involved in the development of fraction understanding and eight were involved in the development of place value concepts.

## **Data Collection**

Data were collected using two instruments; The Number Sense Inventory (NSI) and a series of Daily Number Sense (DNS) quizzes. The NSI is version of the on-line Mathematical Reasoning Inventory for fifth grade students which is available at <https://mathreasoninginventory.com>. This inventory was modified for use in this study. The Mathematical Reasoning Inventory was developed to identify students' use of number sense strategies. Nine of the 14 test questions can be easily answered using common mental math strategies and were selected for use in this study. To detect changes in student strategies, rubrics were developed for each of the nine questions. The rubrics for the number sense questions ranged from five to eight total points for each question. The rubrics were designed to rank both accuracy and efficiency. Correct use of efficient mental math strategies ranked higher on the rubrics than student's correct use of the standard algorithms or less efficient strategies. A panel of five experts in mathematics education evaluated the ranking of each rubric with a rate of 100% agreement. The NSI was administered as an intervention pre and post test. Results of the pretest were analyzed for the frequency of use of number sense strategies. Pre and post results were analyzed to determine strategy gains and Cohen *d* effect size scores were calculated.

From the NSI pretest results, six types of mental math number sense problems were selected for strategy instruction: 1) compensation for addition of numbers close to hundreds' transitions (e.g.  $198 + 17$ ); 2) Using compensation when adding numbers with 5 in the ones place (e.g.  $185 + 25$ ); 3) Using combination of 10 when adding (e.g.  $146 + 34$ ); 4) multiplying by multiples of 10 (e.g. multiplying by 10 increases the value of a digit to the next place value position,  $210 \times 30$ ); 5) dividing by multiples of 10 ( $6600 \div 20$ ); and , 6) estimation of double digit multiplication (e.g.  $31 \times 29$ ). Seven Daily Number Sense (DNS) quizzes containing one question for each strategy were developed. Five point rubrics to evaluate students' use of strategies were developed and used in scoring responses. Quiz results were averaged and an intervention learning trajectory was developed.

## **Results**

### **Strategies Used**

The first research question was: What number sense strategies did students with mathematical learning difficulties use when solving mental math questions? Data to answer this research question were collected from the NSI pretest. In this section the results reflect only the type of strategy used and not the accuracy of use. Student strategies which could not result in a correct answer were categorized as ineffective. The results have been subdivided into the mental math

questions requiring addition and subtractions and the questions requiring multiplication and division.

Students' use of strategies with the four addition and subtraction problems is summarized in Table 1. For NSI question one ( $1000 - 998$ ) the percent of students using each strategy was: 1) compensation (adding 2 to 998) - 11.11%; 2) standard algorithm - 74.07 %; and, 3) counting on - 14.81%. For NSI question two ( $99 + 17$ ) the percent of students using each strategy was: 1) compensation (adding one to 99 and subtracting 1 from 17) - 7.41%; 2) standard algorithm - 85.19%; and, ineffective strategies - 7.41%. For the third NSI question ( $100 - 18$ ), the percent of students using each strategy was: 1) counting backwards - 18.52%; 2) standard algorithm - 74.07%; and, 3) ineffective strategies - 7.41%. For the fourth NSI question ( $15 + \underline{\quad} = 200$ ) the percent of students using each strategy was: 1) compensation strategy (adding 5 to 15 and 5 to 180) - 14.81%; 2) standard algorithm - 59.26%; 3) guess and check - 11.11%; and, 4) ineffective strategies- 14.81%. In summary, the most common strategy used was the standard algorithm which was used an average of 73.15% of the time. Students used counting on or back strategies 8.33%, compensation strategies 8.33% and guess and check 2.77% of the time. Although the majority of the students did not select the most efficient strategies, they did select effective strategies. Students only used ineffective strategies an average of 7.41 percent of the time.

Table 1  
*Percent Distribution of Strategy Use for Addition and Subtraction NSI Questions.*

NSI Questions	Standard Algorithm	Counting on/ Counting back	Compensation	Guess and Check	Ineffective Strategy
1	74.07	14.81	11.11	0	0
2	85.19	0	7.41	0	7.41
3	74.07	18.52	0	0	7.41
4	59.26	0	14.81	11.11	14.81
Average	73.15	8.33	8.33	2.77	7.41

N = 27

Student strategy use for the four multiplication and one division questions is summarized in Table 2. For the fifth NSI question ( $20 \times 15 = 300$ , what does  $21 \times 15$  equal) the percent of students using each strategy was: 1) partial products - 29.63%; 2) standard algorithm - 37.04%; and, 3) ineffective strategies- 33.33%. For the sixth NSI question ( $60 \times 40$ ), the percent of students using each strategy was: 1) multiplication by 10's - 70.37%; and, 2) standard algorithm - 29.63%. For the seventh NSI question ( $15 \times 12$ ) the percent of students using each strategy was: 1) partial products - 3.7%; 2) standard algorithm - 81.15%; and, 3) ineffective strategies - 14.81%. For the eighth NSI question ( $7000 \div 70$ ) the percent of students using each strategy was: 1) division by 10's - 40.74%; 2) standard algorithm - 48.15%; and, 3) ineffective strategies - 11.11%. For the ninth question (estimate  $18 \times 21$ ) the percent of students using each strategy was: 1) multiplication by 10's - 33.33%; 2) standard algorithm - 36.30%; and, 3) ineffective strategies - 17.78%. In summary, the most common strategy used by students when solving the

multiplication and division questions was the standard algorithm which was used an average of 45.93% of the time. The strategies of multiplication/division by 10's and partial products were used 29.63% and 6.67% of the time. Students used ineffective strategies an average of 17.78% of the time.

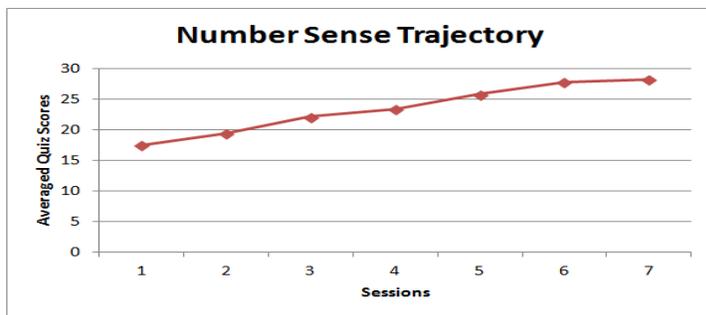
Table 2  
*Percent Distribution Of Strategy Use for Multiplication and Division NSI Questions.*

NIS Questions	Standard Algorithm	Multiplication/ Division by 10's	Partial Products	Ineffective Strategies
5	37.04	0	29.63	33.33
6	29.63	70.37	0	0
7	81.15	0	3.70	14.81
8	48.15	40.74	0	11.11
9	33.33	37.04	0	29.63
Average	45.93	29.63	6.67	17.78

N = 27

### Learning Trajectories

The student responses of the Daily Number Sense (DNS) quizzes were averaged and plotted to develop the trajectory shown in Figure 1. The trajectory indicates a steady averaged growth of 17.48 to 28.17 points. Thirty points were possible.



N = 29

Figure 1 Averaged Learning Trajectory Developed from DNS Quizzes.

The averaged growth between sessions is summarized in Table 3. The average increase between lessons was 1.78 points. The greatest increase in scores occurred after the introduction of the strategy of division by multiples of 10s in lesson 2. The second greatest increase occurred after lesson 4 in which the compensation strategy of adding numbers close to the 100's transitions was introduced. The least amount of growth occurred after the final compensation lesson which addressed adding numbers with combinations of 10.

Table 3

*Increments of NSI Quiz Scores Increase between Sessions*

Sessions	1-2	2-3	3-4	4-5	5-6	6-7	Average Increase
Increment of points increase	1.93	2.73	1.27	2.39	1.95	0.42	1.78

**Pre to Post Intervention Gains.**

Pre and post NSI scores were analyzed to determine students’ gain in the use of number sense strategies. The results are summarized in Table 4. The total number of possible points on rubrics used to evaluate the NSI questions was 62. The averaged student gain was 13.04 points which resulted in a large Cohen *d* effect size score of 1.82.

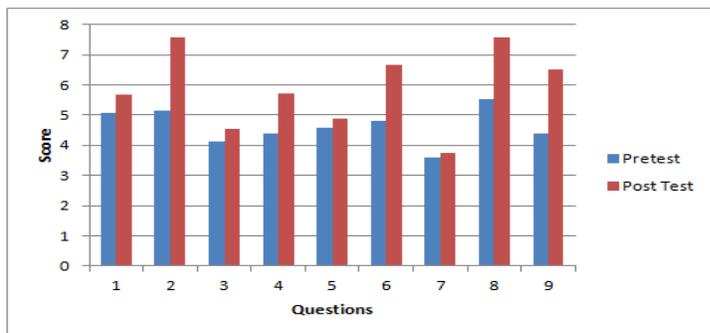
Table 4

*Summary of Student Growth Gains of NSI Rubric Scores*

	Pretest		Post Test		Growth	
	M	SD	M	SD	Gain	Effect Size
NSI rubric score	41.67	8.50	54.85	5.04	13.19	1.87

N=27

Figure 2 shows the changes of growth between the pre and post NSI for each question. The possible number of points varied from 5 to 8 points. Increases occurred for all questions. The greatest pre to post test increases occurred with questions 2, 4, 6, 8, and 9 which increased by more 1.2 points. These were the five questions which used the strategies targeted in the tutoring sessions.



N=27

*Figure 2. Pre and Post Scores for Each NSI Question*

In summary, the results of the data analysis indicated that the students experienced large growth gains for the targeted number sense strategies. The growth was steady and increased with the introduction of each new number sense strategy. Small amounts of growth were also observed in number sense skills which were not specifically targeted during the intervention sessions.

## Discussion

The result of the analysis of strategies for this study was similar to those found in the literature; students with mathematical learning difficulties tend to lack flexibility in their use of number sense strategies (Markovita & Sowder, 1994). When presented with problems which could efficiently be solved using mental number sense strategies, a large percent of the participants solved the problems using standard algorithms. This reliance on the standard algorithm was stronger for questions involving addition and subtraction (73.15%) than for questions involving multiplication and division (45.93%). Students only used three other addition/subtraction strategies: counting on/back, compensation and guess and check. Participants also used two other multiplication/division strategies; multiplication/division by 10's and partial products. Blöte, Klein and Beishuizen (2000), in a review of the literature, identified four understandings students need to enable them to consistently and effectively use a strategy: 1) how to implement the strategy effectively; 2) when to implement the strategy; 3) the value and usefulness of the strategy; and, 4) how much effort they will spend on the strategy. With this knowledge the student can evaluate which strategy would be most effective for each problem. The questions that are important for the development of intervention encouraging mental math strategies becomes; 1) Which of the four understandings do the students not have? And, 2) How do teachers help students develop the understandings needed?

The pretest analysis of the types of strategies being used by the participants suggested that to promote growth of addition and subtraction strategies, intervention introducing the new strategies was needed. Only a small number of students even attempted to use compensation strategies suggesting that the majority of students did not know how or when to use the compensation strategies. Most students are comfortable with addition and subtraction and may not have even considered the value of using alternative strategies. Yet the DNS quiz following the first session introducing compensation had the second greatest learning trajectory increment of growth. During the quizzes, students were not prompted and did not receive feedback on their use of strategies. Therefore, the increase of 2.39 points reflected, not only the students' increased ability to use the strategy, but also the increased value the student gave to its use.

In contrast, the pretest analysis of the types of strategies used for multiplication and division suggest that the participants already had developed an understanding of the value and effort required for the use of the multiplication/division by 10's strategies. Although, their attempts of use were not always successfully, 70.37% of the students used the multiplication by 10's strategy and 40.74% used the division by 10's strategy. It is safe to assume that the students had repeated exposures to these strategies in the past and that they saw value in the strategy use. The needed intervention for this strategy was instruction on how to implement the strategy. This was done by focusing students' attention on developing a stronger conceptual understanding of multiplying and dividing by 10's. The averaged increase of 1.93 points following the multiplication by 10's

and 2.73 points following the division by 10's instruction reflected students' increased understanding of how to use the strategy.

The large effect size score of 1.87 and the steady growth patterns of the number sense learning trajectory suggest that teaching and practicing of mental math strategies was an effective method for increasing Tier II students' use of mental math strategies. The steady increases of the DNS quiz scores suggest that with each lesson, the students not only learned the new strategy being taught, but also maintained and used skills taught in previous sessions. Although the greatest areas of growth by students were strategies targeted during intervention instruction, some students experienced growth in all the NSI questions. This indicates that students not only learned the strategies taught but also began to examine each question with the mindset of determining if there was an alternative strategy that might be more efficient than the standard algorithm.

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EDUC 614: Schooling for a Democratic Society

Democracy in the Borderland; Empowering the Voice of the Mestizo

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## Democracy in the Borderland; Empowering the Voice of the Mestizo

### Introduction

Social Justice Education is an area that studies the impact of dominant ideologies over minoritized groups, it also reveals the necessity for educators and researchers to become involved in social change by challenging the academic inequities existent in the classroom (Apple, 2009; Sensoy & DiAngelo, 2012; Adams, Bell & Griffin, 2008). Multicultural educators Bill Bigelow (2006) and Wayne Au (2009) have stated that to challenge the existent inequalities in the classrooms, students need to be empowered in order to become successful individuals both in their personal lives and academia. Living close to the border region Mexican Americans face different struggles and necessities than students from other diverse areas of the U.S. (Au, 2009; Bigelow, 2006). I will introduce the term of mestizo to better identify the personal experiences that Mexican American students encounter in schooling and how social justice can build upon this definition to empower these multicultural students. Finally, by understanding the duality of the mestizo and its implications, we will be able to bring a better understanding of their realities and present a better academic experience that can lead them to personal transformation and action (Anzaldua, 1999; Delgado 2011).

### The Mestizo

The term mestizo has evolved throughout the years since its inception in the colonized America. According to MacLachlan and Rodriguez (1980) in their book *The Forging of the Cosmic Race: A Reinterpretation of Colonial Mexico*, the definition of mestizo changed radically during the first three centuries of the Spanish rule in the Americas. During the early sixteenth century in the new world a system of castes replaced the traditional European social hierarchies, this new system designated groups of people into seven main ethnic mixtures: European, native

Indians, Africans, mestizos (European-Indians), mulatos (European-Africans), zambos (Africans-Indians) and chinos (Asians of various mixtures). The caste system came to establish a European privileged social and cultural structure to control and stratify ethnic classes in the newly discovered Americas.

According to the caste system the order of importance of ethnics groups was from the highest echelon occupied by the European then mestizo, Indian, Asian, mulato, zambo and at last the Africans who were considered inferior to all because of their slave status. Under the caste system the mestizos were the offsprings of Europeans and American indigenous people. At first, the people that belonged to the mestizo ethnic group were taught to possess impure blood and as such they were treated as being the offspring of illegitimate families. Later on during the seventeenth century, mestizos acquired upward mobility and they joined the American Spaniards in power and facilitated the entry of other mestizos into the upper classes. Finally, during the early eighteenth century the economic development and population growth experienced by the New Spain saw to position its classes dependent on economic wealth rather than the caste system which eventually failed to determine status according to ethnic membership.

During the twentieth-century renowned Mexican writer and philosopher Jose Vasconcelos (1997) wrote his book *The Cosmic Race*, in which he brings a new interpretation to the essence of being mestizo. In his book Vasconcelos envisions a new future for the mestizos, as “the civilization developed and organized in our times by the whites has set the moral and material basis for the union of all men into a fifth universal race, the fruit of all the previous ones and amelioration of everything past” (p. 9). Not only does Vasconcelos state that this new mixed race, the new Mestizos, will surface and accomplish what all other races have not being capable

of, but he also predicts that the new mestizos will have all the superior qualities of all the previous races to help them surpass any unforeseen problem.

Adding to the definition of mestizo that originated with Vasconcelos, Gloria Anzaldua (1999) incorporates another important facet to the identity of the mestizo, their ability to be immersed in many different cultures that some times contradict each other. Moreover, for Anzaldua being a mestiza is to be “a many armed and legged body with one foot on brown soil, one on white, one in straight society, one in the gay world, the man’s world, the women’s, one limb in the literary world, another in the working class, the socialist, and the occult worlds (p. 205). Furthermore, Anzaldua states that the only restriction she has encountered as a mestiza is when society tries to label her failing to recognize the essence of the mestizo, that of duality and lack of establishment.

Another writer, Theresa Delgadillo also relates to Anzaldua’s personal reflection and talks about how the meaning of mestizo is being used along the border region of the U.S. to describe how Mexican Americans have retaken the term mestizo and have changed it to fit their own struggle. According to Delgadillo, for Mexican Americans the term mestizaje has “shifted from one that erases indigenous ancestry to one that claims it, from one that signals only racial mixture to one that celebrates cultural hybridity, from one that bespeaks narrow nationalism to one, that dismantles that striving” (p. 11).

This deconstruction of the term mestizaje and its transformation to spiritual mestizaje opens up the possibility for the critical analysis of the Mexican American experience as seen from the U.S. side of the border. This interpretation of spiritual mestizaje is centered on empowering Mexican Americans to explore and become self-reflexive of the oppression they

suffer and all its manifestations so they can intervene and live a life that honors what is most sacred to them.

### **Defining Mestizo in the Borderland**

One of the most important aspects of social justice is to become empowered and to engage in education that challenges the existent social inequalities (Apple, 2009; Sensoy & DiAngelo, 2012; Adams, Bell & Griffin, 2008). Understanding the notion of mestizos can help us empower students in the borderland in a different way by providing resources and connections that can appeal to the mestizo's sense of duality. Talking about the Mexican American experience we need to address the cultural and social struggles this community has and continues to experience even in our days (Au, 2009). Although not an identical struggle as the one suffered by the Mexican natives at the hands of the Spanish colonizers, the ethnic conflict among European whites and local mestizos or natives still continues to affect students the U.S. border region (Bigelow, 2006). Again, it is of the utter most importance to separate the myths from the reality experienced by these marginalized groups. Mestizos need to deconstruct the colonized history of their indigenous natives of North America and Mexico that they have been taught by the schools of the white colonizers (Delgado, 2011).

Reading about the history of colonization of the Americas we find that the Spanish colonization brought to extinction many of the diverse local populations from the Americas. Along the same lines, reading about the north American colonization we encounter the doctrine of "manifest destiny" that sought to expand the American ideals and its white supremacy to as many territories as possible inside and outside the American continent at any cost (Bigelow, 2009).

In the New Spain the colonizing experience was different than the one suffered by the native groups of the United States, the European groups that came to the Americas tried to cleanse the local inhabitants and eradicate them from the continent at all cost, “cleaning the earth of Indian, Mongolian and Black for the greater glory of whites” (Vasconcelos, 1987, p. 11). Anzaldúa (1999) also talks about how the process of colonization by the Anglo-American became focused on erasing the Mexican identity of the mestizos and to impose them the values and rules of the white supremacists.

In contrast, MacLachlan & Rodriguez (1980) state that although ethnic oppression and discrimination was existent among the Spaniards, the need for the American Spaniards to thrive and flourish in contrast to their European counterparts facilitated the interruption of the ethnic cleansing in favor of an economic class system that could incorporate the local labor force. At the end, “materialism, competition, and the realization that status and social position rested on economic success engendered great stress as well as opportunity” (p. 201). The final blow to the caste system occurred many centuries after the conquest, when the mestizos become the fastest growing ethnic group and their physical traits became so intertwined with the Europeans physical traits that it became almost impossible to identify the real ancestry of any individual solely based on their physical appearance (Leal, 1985).

Is not easy being a Mexican American living in the border region, it becomes easy to connect to stereotypes and disparities of both sides of the border. Mexican Americans are constantly reminded of the good and evil that lurks around the border region. Nevertheless, for yellow journalism and the sensationalist media the local violence, corruption, and murders take precedent over any other story of peace and reconstruction along the Mexican side of the border (Herrera, 2010). According to Pablo Vila (2003), this creates a conflict of identity, “the origin of

Mexican American identity—instead of being an asset on which to construct a valued social identity, can be a liability to many Mexican Americans who construct their identities not only by portraying Anglos as the "others" but also by doing the same regarding Mexican nationals” (p. 105). Living along the border region anyone can have a glimpse to the other side of the border fence and clearly view the poverty and lack of infrastructure that distinguish many Mexican cities along the border with the U.S.

### **Empowering the Mestizo**

As I mentioned before one of the main purposes of social justice is to empower and transform individuals through the use of education that challenges the existent social inequalities and conscientize the individual about how to deal with his/her personal struggle (Apple, 2009; Sensoy & DiAngelo, 2012; Adams, Bell & Griffin, 2008). Through the analysis of the mestizo experience, at the hands of the Mexican American students we can identify different ways in which we can empower Mexican American students to achieve a better educational experience.

To successfully educate the marginalized Mexican American communities should be of key importance as this is one of the fastest growing ethnic groups in the country that very soon will become the fastest enrolling group in public schools in all regions of the U.S. As we have read from Gale and Densmore (2003) one of the main functions of education is to transcend its reproduction role and to reconstruct and challenge the existent dominant groups. Furthermore Gale and Densmore agree about how today the acquisition of academic credentials is viewed as the attainment of profit and power by many dominant groups, this is why minorities such as Mexican Americans are being denied the access to academic resources and equal education.

Au (2009) and Bigelow (2006) have stated that one of the fundamental ways to empower students is by recognizing their cultural and social capital, something that is already acknowledged by the white dominant system but that nevertheless the Mexican Americans have had to fight for to be kept alive in their classrooms. For Leal (1985), literature is one of the mediums that can help Mexican American students recognize and maintain their own identity that has been traced back to their Mexican roots. From this struggle many Mexican Americans have developed the Chicano/na literature that is characterized by the presence of images from both sides of the border, Mexico and Anglo-American. Reading different excerpts from Chicano/na literature, we can see how many key symbols have helped bring unity to the Mexican American cause, how these symbols have linked Chicanos/as to their Mexican ancestry, and how these symbols have helped them in challenging the current established dominant system.

Leal (1985) and Anzaldua (1999) state that is of key importance to maintain symbols that bring the community together, is necessary to keep them alive as they become the living interpretations of the life of the Mexican American in the U.S. Furthermore, seeing it through the eyes of the mestizo Mexican Americans are rooted to different geographical areas and Mexican traditions that are evoked thorough the use of varied symbols that unite them and allow them to live with a different vision that allows them to stand up against oppressive groups.

An example of one such symbol is the remembrance of the city of Aztlan according to Leal and Anzaldua, the ancient capital of the Aztecs, is one such example, it also brings to mind the ancient tale of the black eagle that stood in one cactus consuming a serpent that fulfilled an ancient Aztec prophecy that told the Aztecs were to start building their new city in the Americas in the year of 1325. Aztlan holds a special place for Mexican Americans as it reinforces their authentic origins with the Aztecs as the land of Aztlan, it is situated somewhere in the northern

hemisphere of the U.S. From this special area the ancient Aztec forefathers came to find a new territory where they could start a new civilization in central Mexico. Understanding the duality of the mestizo is of key importance to discover their needs and relationships with others and the world, the location of Aztlan in the U.S. presents an unquestionable connection to the land established thousands of years ago even before the Anglo Americans came to the continent, even before the Spanish colonizers appeared in Mexico, the understanding that this is their rightful land is a powerful idea that can empower individuals to stand their ground against anyone that proclaims that Mexican Americans have no real connection to the U.S. land, and moreover it entitles them to the local heritage.

Leal and Anzaldua also talk about another important symbol amongst the Mexican American population, the sacred Virgin Mary or Virgen de Guadalupe. One of the main emblems of the Mexican identity, the Mexican independence war, embodied in the independence flag of the priest Miguel Hidalgo. What's more, embodied in the tunic of the Indian Juan Diego that brought together the old world and the new world, the mestizo came to be again in the existence of the Virgen of Guadalupe. Even more, Coatlicue the ancient Aztec goddess the one that gives light to all and takes all, became the new goddess and the ancient one, a duality, a mestiza. In the Mexican culture the mother figure has an important connotation of respect and nourishment at the same time not having a mother is one of the worse things anyone can have. The Virgen of Guadalupe is a strong character that illuminates and provides spiritual guidance and comfort to millions of individuals around the world, unquestionably her figure alone has made people accomplish the unthinkable or even the impossible, for the Mexican Americans is a spiritual and religious benefactor that must be recognized.

Although greatly affected by the conquest the indigenous natives of the Americas never were fully eradicated or extinguished, many of their ancient practices and traditional beliefs have been carried out throughout the years and are still alive today. Many times Aztecs were seen and described as uncivilized savages but several authors (Vasconcelos, 1997; Leal, 1985; MacLachlan & Rodriguez, 1980; Vila, 2003) have demonstrated the contrary, that actually the Aztecs had a structured political system, a stable economic structure and a clearly defined social composition. Additionally, the Aztec's highly structured society made it possible for them to train the man power necessary to build the immense pyramids over the Texcoco lake, and create Tenochtitlan a city state that harbored more than 300,000 souls and that became one of the most influential cultural and economical centers of its time (MacLachlan & Rodriguez, 1980). Along the same lines, Leal (1985) also mentions how the Aztecs build one of the most magnificent city states in the Americas, Tenochtitlan, a powerful city that traded with the major southern regions of what is today the U.S. and to the south of the continent it had influence in some northern areas of what is today called South America.

Leal stated that many of the cultural and economical values of the Spaniards also were welcomed among the American natives. According to Leal (1985) some of the commonalities we found between the Aztecs and the Spaniards were that the colonizers valued discipline and having a structured life that allowed them to find rest in the understanding of how things worked both socially and economically under a specific structure. According to Leal, Aztecs also valued being productive members of their society or being employed, to accomplish this Aztecs established a social structure where all the inhabitants fitted into specific social lifestyles that concentrated in the areas of agriculture, crafts, commerce, the militia and politics. Mestizos can accurately challenge dominant structures by demonstrating they are not the kin of an uncivilized

tribe, and to the contrary mestizos can build themselves upon the knowledge of their people, and the good personal attitudes that this group shared with the Europeans.

Another important area for the Mestizo is their family life, in the book by Arum, Beattie and Ford (2011) *The structure of schooling; Reading in the sociology of education* we find several studies that show that for the parents of Mexican Americans is very important for their children to succeed in school, although many times they fail to understand how to do so.

According to Delgadillo (2011) y Anzaldua (1999) some Mestizos have a hard time relating to their parents as they forget that they do not share the same understanding of the world as the mestizos have, the duality and understanding of both the Anglo and Mexican cultures makes the mestizos an experienced navigator of both worlds. Usually, the parents of the Mestizos only have the comprehension of one language, they also have a basic understanding of schooling, and have a hard time understanding the rules and structures of the Anglo American society and their institutions (Rogers & Orr, 2010).

Mestizos can help their parents' link to the new world and by doing so, they can also help themselves. Arum, et al. (2010) stated that the failure for the Mexican American to accept this dichotomy suffered by their parents against the Anglo American system could result in a polarization of their view of the relevance of the family's cultural and social capital. This occurs when students fail to find answers to their schooling experience at home and as they recognize many of the contradictions faced by their home and school cultures. Arum et al. states that at the end if students fail to find support for their academic development in their home's culture their interpretation of what constitutes valuable knowledge can discriminate between the real importance of their cultural knowledge compared against what is considered academic knowledge (Arum et al., 2010).

Another important area for empowering Mexican American students according to Au (2009) is the implementation of multicultural education that focuses on issues of: “racism, freedom, political power, and economic integration” (p.18). Multicultural education is very important as it teaches the students how to identify when they are being discriminated or when they are taking the role of the discriminator. We need to recognize that mestizos can safely navigate between different cultures and many times they need to become aware on how this duality affects their actions and attitudes towards others. As Anzaldua (1999) states, “seen through the eyes of the Mestizo life is full of dualities and exchanges between contradictions and similarities between different cultures and places” (p. 99). The capacity of the mestizos of being dual and having access to both cultures gives them an advantage as they have access to different scenarios and to be able to express their realities and concerns through the use of different discourses that can give them access to wider audiences.

Another advantage of the mestizos is that they have access to varied channels of information, Vasconcelos (1987) mentions how mestizos have a deep understanding about the culture and history of the Anglo American structures and also their personal home structures. Having access to varied channels of information helps mestizos become aware of how the current social and economical power struggles influence education. Moreover, when mestizos learn how to interact effectively with different discourses they can acquire access to important information that can help them find a voice and understand how racial discrimination affects them (Bigelow, 2006). Finally, I will end with a highly recognized phrase from Anzaldua (1999) “mestizos are hybrid people”, she talks about the duality of the mestizo, an individual that belongs to two nations, a native of the Mexican culture and the Anglo Western culture that became one but not the same.

## Conclusion

The mestizo is a powerful concept brought by the colonization of the Americas; the new American caste system identified these individuals as being the offsprings of Spaniards and local natives (MacLachlan & Rodriguez, 1980). Throughout the years the mestizos have risen from the lower social status to various positions in the upper statuses. Vasconcelos (1997), brought a new notion of the mestizaje by stating the importance of the amalgamate of all the races in a new one, a fifth race that could bring all the advantages of all the races in one, he called it the cosmic race. More recently, Anzaldua (1999) talks about a new notion of what is to become a mestizo and through her personal history she defines the spiritual mestizaje that lives inside mestizos. This special type of mestizaje brings together two contradictory cultures and establishes in one individual its own duality.

In the borderland the mestizo has been stereotyped and oppressed (Bigelow, 2006; Au, 2009). Furthermore, the connection of the mestizo with native Mexico has been condemned and criticized (Delgadillo, 2011). The reputation of the ancient Aztec civilization has been questioned, they have been deemed ignorant and then they have been named savage and sadistic (Leal, 1985). Nevertheless, several authors (Vasconcelos, 1997; Leal, 1985; MacLachlan & Rodriguez, 1980; Vila, 2003; Anzaldua, 1999) have demonstrated the contrary that actually the Aztec tribes have been one of the most evolved, educated and socially advanced native group of the Americas.

Finally, taking into consideration several of the symbolisms of Mexican Americans and the understanding of what it is to be a mestizo we encounter several different avenues in which we can reconstruct students and incorporate them successfully into the classrooms. At the end,

we need to bring the mestizo as a reference that we can use to empower and enhance the academic development of Mexican American students and empower them ultimately to achieve a better educational experience through their understanding of how to use their duality to safely and securely navigate both cultures (Bigelow, 2006).

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EDUC 603: Curriculum for a Diverse Society

Analytic Study / Texas Technology Standards

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### Introduction

This analytic paper studies technology standards for the state of Texas with the name of technology applications Texas essential knowledge and skills (TATEKS) that have the objective of preparing and evaluating technology curricula for Texas's academic institutions. As explained by the Texas Education Agency (2011) "The goal of the Technology Applications TEKS is for students to gain technology-based knowledge and skills and to apply them to all curriculum areas at all grade levels". Educational policies such as No Child Left Behind and Race to the Top were founded in the principles and ideas expressed in documents such as the national report *Nation at risk* written in 1983. This report addresses the imperative need for the people, institutions, and the private sector to recover the economic supremacy of the country (National Commission on Excellence in Education [NCEE], 1983). The TATEKS share this foundation as technology is seen as the tool that will fix the problems and take the country up to its former glory. Moreover, twenty one years after the report was given technology continues to be seen as the instrument that will move the country successfully into the next millennia (Johnson, 2004). Likewise, scholars Bybee and Starkweather (2006) explain "technology is one of the disciplines identified as major factors influencing economic progress" (p.27). Today, the report *2010 Progress Report on the Long-Range Plan for Technology, 2006-2020* (State Board of Education [SBE], 2010), continues to focus on technology as the tool that will fix the current condition of the state and improve the quality of education and economic competitiveness in the state.

As technology is transforming the way we communicate, learn, and work, it is indispensable for curriculum theorists to understand the way new technologies impact curriculum and how the current curriculum should be modified to implement these innovative changes. In addition, these authors state that technology has become the holy grail of economics

as societies that possess the latest technologies become more productive and efficient; they explain that technology has simplified, improved, and decreased the costs of many business processes and it will continue doing so. Teaching several technology classes for many years gave me an insight in the importance of technology in the curriculum and pedagogy. Nevertheless, embarking in an in-depth analysis that allows me to understand how the technology standards originated and the context from where they were written will provide me with a clear picture of the objectives and requirements of the technology standards in the state of Texas. Furthermore, by interpreting the foundation and historical framework of technology standards I can challenge or question the purpose and focuses of these standards in the classroom. With this analysis I can determine the validity of the standards and if they are truly meeting their goals, or even more, if these goals are actually improving the quality of life amongst students or if they are limiting their progress. In addition several problems that limit the use of technology resources in academics are discussed in the analysis along several advantages unique to technology. At the end we cannot forget that technology should promote humanity and creativity and not take away the importance of the individual's expression. As explained by the report *Nation at risk* from the 1980's:

Knowledge of the humanities, they maintain [scientists], must be harnessed to science and technology if the latter are to remain creative and humane, just as the humanities need to be informed by science and technology if they are to remain relevant to the human condition. (NCEE, 1983).

Finally, an analysis is done along these lines with the purpose of determining if the TEKS meet their foundation goals.

## History

In 1981 then Secretary of Education T. H. Bell created the National Commission on Excellence and Education with the purpose of determining the condition of the U.S. academic system (NCEE, 1983). This commission produced a report know as *Nation at risk* that addressed some of the deficiencies of the U.S. educational system in the early 1980's as well as the importance of including technology in the classroom curriculum. Most of the suggestions of improvement in this report came from the initiative that:

All, regardless of race or class or economic status, are entitled to a fair chance and to the tools for developing their individual powers of mind and spirit to the utmost. This promise means that all children by virtue of their own efforts, competently guided, can hope to attain the mature and informed judgment needed to secure gainful employment, and to manage their own lives, thereby serving not only their own interests but also the progress of society itself. (NCEE, 1983)

Among the recommendations given by the commission were the ones of including a one and a half year long computer science class for high school students. The purpose of the class was to equip students to: “(a) understand the computer as an information, computation, and communication device; (b) use the computer in the study of the other basics and for personal and work-related purposes; and (c) understand the world of computers, electronics, and related technologies.” (NCEE, 1983)

In the state of Texas the incorporation of the national technology standards in the state's curriculum guides has been seen as especially important; Texas has been one of the first states in the U. S. to promote the implementation and teaching of new technologies in the classrooms (OTA, 1995). Moreover Texas has been preparing itself to meet future technological

requirements by developing long-range technology plans as described by the State Board of Education:

Recognizing the need for a consistent, systemic approach to implementing educational technology throughout Texas, the Texas Education Code, Section 32.001, requires the State Board of Education (SBE) to develop a long-range plan for technology. Texas led the nation with the first Long-Range Plan for Technology, 1988-2000, adopted by the SBOE in November 1988. Subsequent plans were adopted in 1996 and in 2006.

(SBE, 2010)

These Long-Range Technology plans formulate recommendations for the different stakeholders of the Texas educational system by targeting many of the areas that involve the use of technology in academic institutions, such as: “Teaching and Learning; Educator Preparation and Development; Leadership, Administration and Instructional Support; and Infrastructure for Technology.” (SBE, 2010) These plans are updated every two years and can be planned many years in advance. Based on these objectives the Texas Education Agency (TEA) starts the review process for the Technology Application TEKS and at the end of the process the State Board of Education discusses the changes and either refuses or implements the reviewed TEKS (Texas Education Agency [TEA], 2011). The members of the board need to be nominated by the current members of the organization and include “educators, parents, business and industry leaders, and employers (TEA, 2011)”. In addition, the TEA also pieces together many technology standards based on the National Technology Standards (NETS) and performance indicators developed by the International Society for Technology in Education (ISTE). ISTE is an international nonprofit association deeply involved in the establishment of national technology standards in education with the objective of “improving learning and teaching by advancing the effective use of

technology in PK-12 and teacher education” (ISTE, 2011). This policy affect mainly the citizen of the state of Texas as it relates to students and institutions that work with them. Although we cannot forget that whatever these kids learn in High School is going to impact their future life.

### **Analysis**

The list of technology standards pertinent for High school is divided in ten different sections: Digital Design and Media Production, Digital Art and Animation, 3-D Modeling and Animation, Digital Communications in the 21st Century, Digital Video, and Audio Design, Web Design, Web Communications, Web Game Development, Independent Study in Technology Applications and Independent Study in Evolving/Emerging Technologies (TEA, 2011). Also, the Technology TEKS share the same components stated by the NETS that include: creativity and innovation; communication and collaboration; research and information fluency; critical thinking, problem solving, and decision making; digital citizenship; and technology operations and concepts (TEA, 2011).

This paper will focus on the Technology Applications TEKS for Digital Communications in the 21st Century (see Appendix). The introductory section for the digital communication standards states that through the use of different technologies students are expected to use online tools to find answers to real world problems affecting any geographic scene, make decisions to inform and persuade, work productively to solve society’s demands, present effective products that please authoritative stakeholders, and lastly effectively use multimedia tools to share their voices and influence change (TEA, 2011).

Many of the assumptions that constitute this section make me believe that the purpose of technology is to optimize the social utility of individuals as the theory of social efficiency states. Based upon the report of a *Nation at risk* that affirms that:

The world is indeed one global village. We live among determined, well-educated, and strongly motivated competitors. We compete with them for international standing and markets, not only with products but also with the ideas of our laboratories and neighborhood workshops. America's position in the world may once have been reasonably secure with only a few exceptionally well-trained men and women. It is no longer. (NCEE, 1983)

I believe the importance and transcendence of technology in education is evaluated in this document in its capacity to generate economic hegemony and productivity. Therefore, when I read about how technology standards affirm that students should “create a solution, and evaluate the results for authentic, real-world local, state, national, and global issues” (TEA, 2011), I assume they are talking about the importance of the individual in solving economic issues affecting today’s globalized economy. Moreover, I also find a similar statement in the 2010 Texas progress report that affirms that technological resources in Texas are empowering students to become successful “ world-class communicators, competitive and creative knowledge workers: as engaged, productive, and contributing members of this 21st Century society” (State Board of Education [SBE], 2010). Again by using words such as competitive, world-class, knowledge workers, and productive members of society, I believe that the main purpose of technology stated in this document is to help individuals become more productive and competitive. This economic focus of the industrial age is discussed by Slattery (2006b) when he wrote about how antique civilizations that move from tribal and feudal societies into a capitalistic based economy rely on scientific technology in order for change to occur.

Many standards remind me of scientific management when they talk about how the student should “use innovative thinking to develop new ideas and processes for solving real-

world issues and conveying those ideas to a global audience ... generate innovative, sustainable solutions for real-world issues such as global warming, immigration, or the global economy using emerging digital tools ...examine real-world issues relating to current topics such as health care, government, business, or aerospace” (TEA, 2011). The development of innovative processes, innovative solutions, and analysis among other objectives established by the standards bring to mind notions of scientific management that focus on efficient processes, knowledge transfer, and analysis of business practices. In the same manner, scholars Bybee and Starkweather (2006) support this idea by identifying: "technology as one of the disciplines identified as major factors influencing economic progress" (p. 27). As a matter of fact, these authors state that technology has become the holy grail of economics as societies that possess the latest technologies become more productive and efficient; they explain that technology has simplified, improved, and decreased the costs of many business processes. It is evident that “Technology is radically transforming a host of other occupations. They include health care, medical science, energy production, food processing, construction, and the building, repair, and maintenance of sophisticated scientific, educational, military, and industrial equipment” (NCEE, 1983) but still the human element is the one that has the final word in making the technology work.

I will think that with the emphasis technology has received throughout the years, nowadays the U.S. should experience a great deal of technological advancements and economic profit. Nevertheless, as Champan, Masters, and Pedulla (2010) affirm the U.S. suffers from an undeniable digital divide that separates society among people that have access to technology and the ones that don't. Digital divide is an important term that acknowledges the technological inequalities experienced by many individuals. The digital divide refers to the existing imbalance

of technological resources utilized by some groups compared to other groups among the academic population (Chapman et al., 2010). Today we are experiencing an increasing worldwide demand for skilled workers that know and understand how technology works, but still many segments of the labor force lack the access to training, technological resources and the understanding of how to make this happen (Milwood & Terrel, 2005). Lastly, with the eminent raise of minorities in the U.S. is foolish to discover as Bieber, Marchese, and Engelberg (2005) demonstrate that minority groups are not encouraged to enroll in technology classes and more troubling they are not even taken into consideration in the structure of these programs. Another pitfall of the use of technologies in the classroom is time management, the strict use of computer time as a measuring tool for academics is biased. Schools implement technologies to help them manage strict schedules and activities where the outcomes are appraised in how many hours the students has used the programs instead of focusing in the quality of the interaction by constructing critical work and evoking self expression (Slattery, 2006c, p. 274). In the international arena we have seen how technology has eroded the international barriers and how many countries are taking advantage of the new global competition (Slattery, 2006b). But still we cannot overlook that, “Global transformations have brought the promise - but not necessarily the reality - of freedom from totalitarian regimes to some societies” (Slattery, 2006a, p. 284) as antiquated political systems try to limit the impact of the global media in its citizens technology demonstrates how it can be utilized to control and perpetuate the current status quo.

To conclude, Slattery (2006) states that western civilizations are in crisis, and that there is an eminent need for a new system, a system that will take into consideration the legitimacy of global diversity and its ramifications in both the cultural and economic spheres. As Slattery explains:

The modern world is coming to an end, something new needs to replace it, social criticism, expose contradictions, negative impact of modern technology, ecological sustainability, beyond materialist philosophy of modernity, celebration of otherness, revolutionary paradigm, movement toward de-centering. (2006b, p. 17)

But not only economic gains are to be obtained from technology; a variety of new technologies can also improve the way we learn and understand information. As scholars Milwood & Terrel (2005) assert:

Some propose that technology might be used solely to reduce unit costs and to "capture" a growing international market -our evidence suggests this is misguided. In our view this would miss an opportunity for curriculum and pedagogic change which would enhance the role of higher education in society and economy (p. 195).

However, we need to understand "that technology itself is merely a tool, and it is the method of implementation of technology that can lead to improvements or degradation of student outcomes" (Chapman et al., 2010, p. 239). Along these lines the report *Teachers and technology: Making the connection* mentions the importance of teaching technology by saying that:

The urgency of investing in technological literacy, broadly defined, stating that increasing the technological literacy of the public would improve decision making, increase citizen participation, support a modern workforce, enhance social well-being, and narrow the digital divide. (OTA, 1988, p. 286)

I can clearly read that institutions place too much faith in technology and forget about the necessity to follow through with equipment, training, and critical pedagogy. This is the same error that we find in the intention of using technology as an economic tool; just by implementing technology in the curricula it does not mean that gains will materialize. As Slattery explains we

are finding out the hard way that the overt assumption that the “world is a wholly knowable system governed by a finite number of universal laws which humans can comprehend by rigorous analysis and rationality direct for the personal benefit of men and woman” (2006b, p. 25) is not longer true. For example, Doyle (2009) and Robinson & Hullinger (2008) explain how even today in a highly computerized world instructors cannot be replaced with programs or automated simulations because of the complexity and dynamism required by their position. They point out about how frequently the human element is the principal cause of failure in technology education by missing the physical and mental resources necessary to deliver the material, required funding, and are inadequately trained.

Nevertheless, in good hands technology has the capacity to help students by providing alternatives to the problems of access, engagement, community, pedagogy and cost (Milwood & Terrel, 2005). For example technology could be made available to students living at distant locations where is difficult to send teachers and educational materials. As well, distant learning can help students learn in new ways by providing different engaging tools that appeal to different learning styles. Finally, as Miwood & Terrel (2005) explain distant learning lowers the cost of instruction as the Internet is available almost everywhere in the world for a fraction of the cost of sending teachers and materials to inaccessible places.

### **Evaluation**

The evaluation of the technology standards is gathered through the use of the campus Star Chart for teaching and learning that has the purpose of producing:

A profile of the campus’ status toward reaching the goals of the Long-Range Plan for Technology (LRPT) and No Child Left Behind. The profile indicators place a campus at one of four levels of progress in each key area of the LRPT: Early Tech, Developing

Tech, Advanced Tech, or Target Tech. The key areas include: Teaching and Learning; Educator Preparation and Development; Leadership, Administration and Instructional Support; and Infrastructure for Technology. Most campuses in Texas show continued improvement and are moving from lower levels on the campus chart towards the Target Tech level. (State Board of Education, 2010)

During the past decade the data gathered by this chart situates most schools in Texas as either developing or advanced tech in teaching and learning, the only problem I have with this assessment tool is that schools evaluate themselves. On the other hand I believe we should evaluate how successfully students feel with the technology curriculum and materials they have in their schools and how teachers use them. Again we lose the focus of the student and leave him/her buried out in a pile of bureaucracy and institutionalism. Finally, if we would assess technology by the economic and industrial achievement it has brought to the country it will fail miserably as global competition and outsourcing have greatly impacted the pockets and the minds of many individuals in the local economy (Knapp, 2008). Moreover the digital divide still persists and students are constantly discriminated in the use of technological resources and training; as we read from this recent study:

What does it profit students to have technology access if both they themselves as well as those instructing them do not have the training or capacity to utilize this technology efficiently? Differences in technology access among schools cannot be solved by funding alone. (Chapman et al., p. 248)

### **Conclusion**

The Texas technology standards are based on the 18<sup>th</sup> hundreds educational theories were students were prepared to live and work in factories right after the industrial revolution (Slattery,

2006b). As stated in the report *Nation at risk*, “Our once unchallenged preeminence in commerce, industry, science, and technological innovation is being overtaken by competitors throughout the world” (1983) and it’s our duty to take it back. In the same manner we read the next lines written explicitly for the state of Texas:

References also are frequently made to economic and social shifts that have made technology skills critical to the future employment of today’s students, and more broadly, to the importance of technology innovation to maintaining the economic and political dominance of the United States globally (SBE, 2010, p. 283)

The implementation of technology in the academic field has been filtered along the lines of social efficiency and scientific management. The ideal of improving the economic wealth of the country has not been met and even more academic institutions are also being questioned about the successful use of technology in their classrooms. In an article from CNN money we read about students that call themselves “The 99%” and how they are revealing their frustration and anger towards the academic and economic institutions themselves as to the extent to ask them: “Where is the university's responsibility to its customers? Hell, where is its responsibility to America?” (Primack, 2011, p. 5). Technology standards must be explored in context, understanding how the type of learner, the particular content, and the pedagogical approach influences the successful use of technology in the classroom. Ultimately society is the only one that can challenge the way technology curricula is being used in the classrooms as organizations have failed in delivering the promised educational and economic benefits.

## Appendix

### Digital Communications in the 21st Century

(a) General requirements. The prerequisite for this course is proficiency in the knowledge and skills described in §126.12(c) of this title (relating to Technology Applications Grades 6-8). This course is recommended for students in Grades 9-12. (One Credit).

(b) Introduction.

(1) The technology applications curriculum has six strands based on the National Educational Technology Standards (NETS•S) and Performance Indicators for Students developed by the International Society for Technology in Education (ISTE): creativity and innovation; communication and collaboration; research and information fluency; critical thinking, problem solving, and decision making; digital citizenship; and technology operations and concepts.

(2) Through the study of technology applications students learn to make informed decisions using digital tools and appropriate applications. By using online research and information resources, such as journals, newspapers, or authoritative databases, students will synthesize knowledge, create a solution, and evaluate the results for authentic, real-world local, state, national, and global issues. Students support and manage the work of individuals and groups to create products to inform and persuade their proposed solutions using appropriate communication skills and methods of delivery.

(3) The purpose of this course is to prepare students for the societal demands of increased civic literacy, independent working environments, global awareness, and the mastery of a base set of analysis and communication skills. Students in this course will be expected to design and present an effective product based on well researched issues in order to

thoughtfully propose suggested solutions to authoritative stakeholders. The outcome of the process and product approach is to provide students an authentic platform to demonstrate effective application of multimedia tools within the contexts of global communication, collaborative communities, and appropriately share their voice to affect change that concerns their future

(c) Knowledge and skills.

(1) Creativity and innovation. The student demonstrates the ability to analyze, evaluate, and adapt during the creative problem-solving process and demonstrates creative thinking in developing solutions to real-world issues using digital tools. The student is expected to:

- (A) generate innovative, sustainable solutions for real-world issues such as global warming, immigration, or the global economy using emerging digital tools;
- (B) gather and evaluate accurate information for feasibility and practicality as a basis for making communication decisions; and
- (C) analyze the ethical and social responsibilities as a project team when communicating with peers, stakeholders and experts.

(2) Creativity and innovation. The student uses innovative thinking to develop new ideas and processes for solving real-world issues and conveying those ideas to a global audience through a persuasive digital product. The student is expected to:

- (A) examine real-world issues relating to current topics such as health care, government, business, or aerospace;
- (B) develop innovative solutions to address the issues;

(C) create unique methods and products conveying solutions to audiences beyond the classroom such as school officials, non-profit organizations, higher education officials, government, or other stakeholders;

(D) demonstrate the effective use and importance of verbal and nonverbal communication skills when presenting ideas and solutions to diverse audiences; and

(E) use appropriate techniques to manage communication apprehension, build self-confidence, and gain command of information.

(3) Communication and collaboration. The student develops a process to effectively communicate with peers, experts, and other audiences about current issues and solutions to global problems. The student demonstrates innovative uses of a wide range of emerging technologies, including online learning, mobile devices, digital content, and Web 2.0 tools such as podcasting, wikis, and blogs. The student is expected to:

(A) participate within appropriate electronic communities as a learner, initiator, and contributor;

(B) extend the learning environment beyond the school walls using appropriate digital tools;

(C) collaborate with a variety of field experts;

(D) prepare for, organize, and participate in an informative or persuasive group discussion with an audience; and

(E) participate appropriately in conversations by making clear requests, giving accurate directions, and asking purposeful questions.

(4) Communication and collaboration. The student uses digital tools to facilitate collaboration and communication in the design, development, and evaluation of products offering solutions to real-world issues. The student designs a collaborative working environment that enables a group to investigate a local, state, national, or global issue.

The student is expected to:

- (A) design and organize resources to create an effective collaborative environment;
- (B) analyze and evaluate effective communication;
- (C) demonstrate leadership by managing project activities such as timelines, research, product development, marketing material, and effective communication skills;

(5) Research and information fluency. The student uses a variety of strategies to acquire and evaluate information relating to real-world issues. The student is expected to:

- (A) locate authoritative information from primary and secondary sources such as field experts, online full-text databases, or current news databases;
- (B) make decisions regarding the selection, acquisition, and use of information gathered, taking under consideration its quality, appropriateness, effectiveness, and level of interest to society; and
- (C) demonstrate fluency in the use of a variety of electronic sources such cloud computing, emerging collaboration technologies, data mining strategies, and mobile or other technologies.

(6) Research and information fluency. The student uses a variety of digital tools to synthesize information relating to real-world issues in student-created materials. The student is expected to:

(A) construct real-world informational materials that inform, persuade, or recommend reform of selected issues; and

(B) identify and employ a method to evaluate the design, functionality, and accuracy of the student-created materials; and

(C) use effective strategies to organize and outline presentations to support and clarify points;

(7) Critical thinking, problem solving and decision making. The student uses critical-thinking skills to conduct research, manage products, solve problems, and make informed decisions for real-world local, state, national, and global issues. The student is expected to:

(A) identify and define authentic problems and significant questions for investigation;

(B) design and implement procedures to track trends, set timelines, and review/evaluate progress for project completions; and

(C) read and use technical documentation, including appropriate help options, to complete tasks; and

(D) analyze the audience, occasion, and purpose when designing presentations.

(8) Critical thinking, problem solving and decision making. The student creates a product presenting solutions for real-world local, state, national, and global issues. The student is expected to:

- (A) create technology specifications for tasks and rubrics to evaluate products and product quality against established criteria;
- (B) resolve information conflicts and validate information by comparing data;
- (C) represent diverse perspectives in problem solutions; and
- (D) prepare and use visual or auditory aids, such as scripts, notes or digital applications, to enhance presentations;

(9) Digital citizenship. The student examines ethical and legal behavior to demonstrate leadership as a digital citizen. The student is expected to:

- (A) model safe and ethical use of digital information;
- (B) model respect of intellectual property when manipulating, morphing, or editing graphics, video, text, and sound;
- (C) use technology applications in a positive manner which supports productivity, collaboration, and continuing education; and
- (D) use professional etiquette and protocol in situations such as making introductions, offering and receiving criticism, and communicating with digital tools

(10) Digital citizenship. The student demonstrates ethical and legal behavior in the creation of student products. The student is expected to:

- (A) use collaborative tools and strategies; and
- (B) use digital tools to correctly document sources such as in bibliographies or works cited.

(11) Technology operations and concepts. The student will make decisions regarding the selection, acquisition, and use of digital tools in a multimedia classroom/lab taking under

consideration the quality, appropriateness, effectiveness, and efficiency of the tools. The student is expected to:

- (A) determine the most appropriate file type based on universally recognized file formats, such as PDF, .TXT, .RTF, and .JPG;
- (B) use compression schemes for photo, animation, video, and graphics; and
- (C) distinguish among appropriate color, sound, and design principles, such as consistency, repetition, alignment, proximity, ratio of text to white space.

(12) Technology operations and concepts. The student demonstrates knowledge through various cloud and network technologies such as web-based interactive presentations, document sharing, and online scholarly databases. The student is expected to:

- (A) use necessary vocabulary related to digital tools;
- (B) demonstrate how to retrieve and discriminate between authoritative and non-authoritative data sources; and
- (C) adopt, adapt, and transfer prior knowledge to multiple situations when retrieving, manipulating, and creating original digital projects.

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**Title:** Using Community Based Participatory Action Research to Engage Diverse Stakeholders in Education Reform: the *One Voice for Higher Education* Project.

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**Abstract:**

One Voice in Higher Education is a community-based initiative designed to engage community stakeholders in defining and leading education reform. This initiative took place in a rural county represented by three ethnic groups, where one in three students does not graduate from high school. Extending critical pedagogy to the community that surrounds the education system, a primary assumption underlying the initiative is that individual actors within the community know what they need to know to engage in education reform, and have the tools locally to create change. A collective impact strategy was employed based on this assumption. A community foundation in partnership with a small private university coordinated an effort to engage public and private stakeholders across fifteen school districts in South Central Washington. A multi-disciplinary team used Community Based Participatory Action Research (CBPAR) and Compression Planning methods to engage community partners in collective identification of community priorities. Fifty representatives from diverse public and private agencies engaged in collective agenda-building over 14 months, culminating in an education reform implementation plan. Participants articulated five community goals and accompanying benchmarks for the education system, and devised strategies, and an implementation plan around each goal. Twenty one participants (43%) committed to active engagement in initiative implementation. Funding opportunities provided by the community foundation were designed to support collegiate, cooperative processes as opposed to traditional competitive request for proposal processes. The CBPAR methodology did not follow a smooth pathway, as the inquiry took place in a complex social and

political setting. Geographical distance, inter-agency competition for funding, and distrust caused by historical conflict between groups all contributed to initiative complexity. Further inquiry into the application of CBPAR and education reform is encouraged.

Title of the Submission:  
**Critical Thinking and Nationalism: the Road towards learning Foreign Languages**

Topic Area of the Submission:  
**Cross-disciplinary areas of Education**

Presentation Format:  
**Workshop**

Description of the Presentation:  
Teachers of Foreign Languages are not only teaching words and syntax; they are also communicating an image of a specific culture. We forget that some of the reasons why we remain hesitant while learning a language is the fact that we refuse some of what comes with a language and what we give up concerning ours. Cultures grow together, and nationalism becomes reconsidered once we start acknowledging the “other”.

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## **Abstract:**

### **I - Research Objectives:**

Researching Foreign Language Teaching in a political dimension brings both language and culture together, in the name of intellectual indifference.

Our objectives are as follows:

- Bringing forth the cultural dimension in Language Education
- Linking both Cultural and Political Dimensions
- Configuring Language Teaching in terms of Nationalism

### **II - Proposed Methodology:**

Our research starts with the cultural components that we communicate in our classes. What do we learn through the lessons we give? These cultural components will be highlighted to complete another perspective: the political reading of cultures.

Nationalism has been a pride that caused some countries problematic relationships with others, in the name of that same pride that is reconsidered every time a culture accepts or rejects a foreign trait.

We will read historical events together through main nationalistic moments, in Europe, as well as in the United States and the Middle East. These main moments will be used to try to draw a relationship between how fragile language teaching can be when confronted with nationalism. It is a matter of degrees and we will use examples of lesson plans where this confrontation can be innocent, and where it is not.

This last step will lead us to a more precise scheme for teaching languages.

### **III - Expected Outcomes:**

We look forward to discussing these concepts in the name of language teaching, which has become a foundation to this global world that only keeps growing bigger.

We wish to obtain, at the end of our workshop, a new definition of nationalism, which will include a specific place for foreign cultures, as well as will hopefully leave room for change in the particular culture, that is opening up to the other cultures.

### **IV - Abstract:**

Through Critical Thinking, languages are taught in a different way and for a different reason. Learners have a purpose for what they wish to know, and teachers allow them to obtain a final outcome. Learning a foreign language is mostly a means towards a bigger purpose. Once the purpose is discussed in class, cultural components appear to be necessary to understand and use the language in a more useful way. A culture only emerges versus another, and both live together as both of them grow. The learner looks at his or her

own language differently, and views the new language as a new material to use in his or her life.

This cultural dimension is a social image of a political idea: where does the “other” language stand in relation to the native language? Questioning the relationship between both languages brings forth the political reading of cultures. Languages can be taught in the name of colonization for example, or for the need to evolve in a global world. Once defined, the relationship between languages makes learning them meaningful. The profile of a bilingual student is expected to be different from that of a monolingual one, and his or her way to deal with other cultures can be said to be more politically tolerant than that of the monolingual one.

Political discussions are necessary to draw a better way to look at the languages we learn, the cultures we accept and enhance through the languages we use. Nationalism is the political form that any country accepts without reviewing what it means in terms of the way to deal with foreign cultures. We will strive to place languages in this political concept that is nationalism, to measure how effective a methodology that is based on critical thinking is in the midst of the political structures that we place languages in.

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## **Proceedings Submission**

### **Promoting Intercultural Competence through Cultural Weblogs and Related Activities (ID #739)**

**Chinatsu Sazawa**

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#### **Abstract**

Though there is strong professed commitment to cultural learning and intercultural competence in world language classrooms, in many courses, culture is treated as a superficial entity (Omaggio, 2001; Schulz, 2007). In particular, within beginning level language classes, cultural learning tends to focus almost entirely on products (historical facts, art forms, foods, laws, etc) and practices (patterns of behavior or social interactions), failing to delve into the underlying perspectives (beliefs, values, attitudes, and meanings ) of the culture (Schulz, 2007). Bernhardt and Berman (1999) explain that a shortage of time, students' limited target language knowledge, and a lack of background knowledge are often at the root of the problem. Additionally, in classrooms where the target language is used almost exclusively, students' limited language proficiency restricts the range of materials teachers can bring into their classes, and prevent students from practicing the intellectual conversations necessary to cultivate the skills to observe, analyze, and think critically about other cultures.

A number of studies and literature in the field of language education have emphasized the importance of intercultural competence in language learning. Language learning is not just about learning linguistic forms. Vocabulary and grammar are integrally related to how they are appropriately used in specific contexts, and learning a language entails equipping ourselves with a "powerful tool to construct new culture" (Bialystock and Hakuta, 1994, p.161). Developing cultural sensitivity coupled with language ability is especially vital in a modern global, interdependent society. It is not hyperbole to say that proper education can promote mutual understanding among the people of the world and play a critical role in the reduction of social tragedies, such as "hate crimes" both at home and abroad (Omaggio, 2001).

The cultural learning weblog is designed to promote intercultural competence from the earliest stages of language learning. Through bi-weekly postings prepared by the instructor, students examined modern Japanese socio-cultural issues, reviewing multiple web resources and exchange their opinions primarily in English. In-class discussion generally consisted of five minutes per blog posting, and functioned as an icebreaker for the online discussion completed as homework. Blog participation provided opportunities for students to engage in critical thinking

activities that promoted acquisition of cultural sensitivity, knowledge, and understanding. The blog also supplied information regarding cultural perspectives crucial to language activities and tasks carried out in the classroom. For example, the real life example of Ichiro Suzuki (a MLB player) bowing to fans is used to illustrate the significance of proper greetings and leave taking, etiquette, and humility in Japanese culture.

Through their experience with cultural learning weblog, students showed a change in attitude towards the target culture. Participants initially responded to posting with brief and judgmental comments, such as "it is bizarre." However, as the semester progressed, comments became more analytical, demonstrating deeper reflection on Japanese history, values, and customs. This change in attitude is a common objective of cultural learning: to be able to consider various perspectives, and understand that people behave in a certain way "because they are using options their society allows for satisfying basic physical and psychological needs, and that cultural patterns are interrelated and tend mutually to support need satisfaction" (Seelye, 1997, cited in Schulz, 2007, p.14).

Students' feedback was very positive. In the course evaluations, 95% of students either "strongly agreed" or "agreed" with the statement "The culture blog was effective in helping me to develop my understanding of the culture I am studying". In the anonymous questionnaire provided at the end of school year, over 90% of students "strongly agreed" or "agreed" that the blog increased their interest, awareness, and appreciation of Japanese culture, and that the blog helped them to see cultural phenomena and issues within a larger context of history, politics, and economics.

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## **Proceedings Submission**

### **Exploring Intercultural Competence through a Professional Learning Community (ID #740)**

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#### **Abstract**

A Professional Learning community (PLC) is a group of educators who come together, share their knowledge and experiences, exchange opinions, and collaboratively attempt to accomplish selected goals to grow professionally and improve student learning outcomes (e.g., Padwad & Dixit 2008; Kristmanson, Lafargue & Culligan, 2011). Research indicates that PLCs enable teachers to join supportive professional communities, and connect to each other (Gersten et al., 2010; Huang, 2007; Thibodeau, 2008). The U.S. school culture, often steeped in a tradition of individualism, can lead to teachers feeling isolated. As a result, a large number of teachers change or leave their school and the profession early. (Dunlap, Neale, & Carroll, 2000; Thibodeau, 2008; Carroll & Fulton, 2004; Heider, 2005.) The PLC provides a support structure, and helps teachers break out of such isolation and remain in the profession. The PLC can also offer participants the place and time to acquire new knowledge, to reflect on their own beliefs and practices, and to receive feedback and advice (e.g., Gusky, 2000; Kristmanson et al, 2011; Murphy & Lick, 2001). With access to new knowledge, reflection and collaboration, the PLC encourages teachers to try something new, frequently achieving marked “teacher change” - the goal of teacher education (Bachmann, 2012).

In this session, presenters will reflect upon a case study of one PLC that focused on intercultural competence. Intercultural competence is the ability to successfully communicate and function in intercultural settings (e.g., Moule, 2008; Rathje, 2007). Existing literature emphasizes the importance of intercultural competence in this global era and also the vital role schools play in its promotion (e.g., Hammer, Bennet & Wiseman, 2003; Cheng, 2007; Moule, 2008). In the featured PLC, five world language teachers teaching different languages at the same institute, met regularly, and explored the concept of intercultural competence during the summer semester. The members shared their experiences, ideas, and teaching materials, and supported each other to design and embed new classroom cultural learning activities to promote intercultural competence.

The researcher participated in the PLC activities as a participant observer, collecting data such as field notes, audio recordings of the group meetings and individual interviews, and questionnaires. The collected data indicates that the PLC

members established a collaborative and collegial relationship and a sense of community through their PLC activities. The participants also reported sharing teaching materials and ideas, and that receiving support from their colleagues motivated them to improve their cultural instruction while incorporating new teaching materials. Despite acknowledging the positive impact from participation, some members struggled to commit time to the PLC activities due to their hectic daily schedules. The researcher will share more detailed case study outcomes as well as recommendations for future PLCs in her session.

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# Title Page

**1. Title of the submission**

The Impact of Group Work Enhanced Learning Model in Higher Mathematics Education

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**6. Full paper**

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# The Impact of Group Work Enhanced Learning Model in Higher Mathematics Education

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## ***Abstract:***

Most learning models have been relied on students' individual studying activities. In those models, the efficiency of learning varies among different students, and thus is limited. In this paper, we propose a systematic group study model to improve the learning efficiency for diversity students. By using instructed in-class and out-of-class group work, the group study model has the advantages to overcome the shortages of the individual study models and can improve the study efficiency for diversity students. Furthermore, in this model, students can learn from the group as well as from the instructors, thus the teaching performance can be improved. In experimental results, we use statistical analysis to show the improvement of teaching performance and study efficiency for the proposed group study model.

*Key words:* Group Study model, diversity students, in-class and out-of-class group work.

## **1. Introduction**

In recent years, with the rise of economic uncertainty and increasing unemployment rates, university enrollment has been on the upswing. Unfortunately, many students (nearly 40%) are unprepared for the college-level mathematics courses required for a degree [1]. Although many courses typically have prerequisite courses designed to ensure that students possess the necessary knowledge and skills to be successful in a higher-level course, not all students meet prerequisite skill levels. The lacking of required content or rigor could affect a student's success in those courses [2]. Levin and Koski et al [3] proposed identity ingredients to be central for designing successful interventions for underprepared students in higher education. These essential ingredients clearly focus on enforcing underprepared students' academic and social growth by means of individual and group works.

In addition, the student population in higher education is much more diverse than that in previous years [4, 5]. Whether or not diversity benefits the group performance still remains a debatable topic. Dreifus and Hong [6, 7] proposed that diversity among a group of problem solvers is more important than individual. In their experiments, diverse groups of problem solvers outperformed the groups of the best individuals at solving problems. While, in Page's book [8], he explained why difference beats out homogeneity in that identity-diverse groups in particular have a mixed record, sometimes performing better than homogenous groups and sometimes worse. In addition, working in a well-functioning group may avoid knowledge-sharing errors [9-11].

It's generally accepted that group study is more effective than individual study [12, 13]. Group theorists have espoused multiple benefits of participating in a group as a member including: empathizing with future group members, enhancing leadership abilities, experiencing the power of group, and promoting self-awareness [14-16]. The discussion of class participation

and its assessment is broadened by the work of Vandrick et al [17], noting that class participation requires students to speak in class by asking and answering questions, making comments and participating in discussions.

Several group study strategies have been discussed in [18-24]. In [18, 22], effective classroom discussion techniques are proposed to create interactive learning atmosphere for students. In [23, 24], the instructors' roles in group discussion are discussed to further promote learner participation. In [20, 21], an evaluation is conducted on how the use of information and communication technology can support group discussion and flexible learning. However, there is a lack of systematic study on these strategies from Science Educators, and very little research testing this argument has appeared in educational journals.

In this paper, we propose a systematic group study model and evaluate the teaching performance using statistical analysis to demonstrate the successful application of the proposed model.

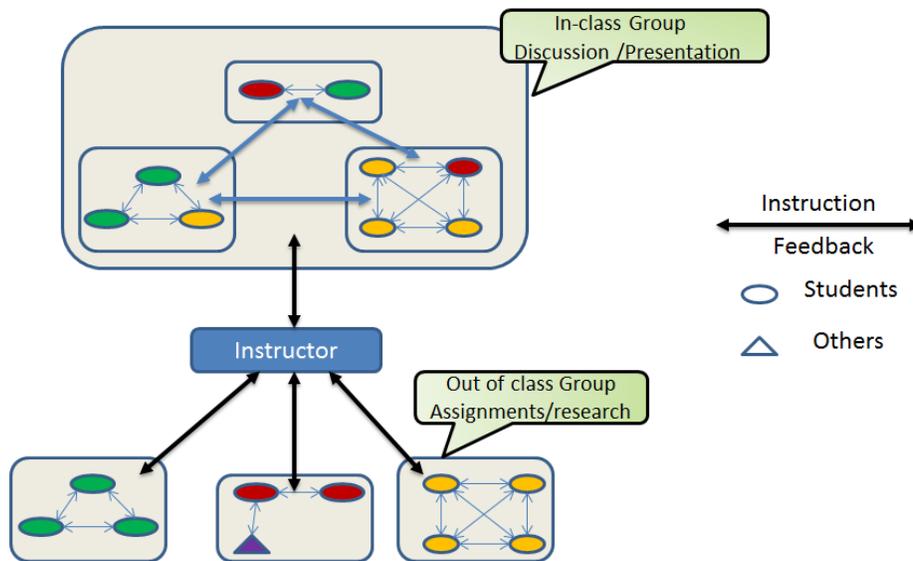


Figure 1. The pathways of the multi-way communication among participants in a group study model.

## 1. Group Study Model

A group study is a collection of individuals who cooperate on the same tasks via various ways to obtain their individual goals. In this model, the people who participate in the group discussion are not limited to the students or the instructors. Students are encouraged to search for any kinds of resources such as their supervisors, relatives, or tutors. This is especially important to those students who couldn't get sufficient support from their group members and instructors.

Several strategies are conducted in the group study model through the students consistently participating in and out of class group studies. For students, their activities may include reporting in-class group discussion results, submitting out-of-class group assignments, giving in-class presentations, and working on related research topics. For instructors, their activities may include organizing and attending group discussions, assessing, implementing, and improving group work performance. It's very important that an instructor need to attend student's group discussion. It

not only helps instructor to get instant feedback and provide immediate instructions, but also encourages the attendance of the out-of-class group homework discussions.

Figure 1 shows the pathways of the multi-way communication among an instructor, the students, and other potential participants in a group study model. In this illustration, a group consists of 2 to 4 members (no more than 4 members are allowed in a group). The black double-headed lines indicate the feedbacks and instructions between instructors and the students. The black double-headed lines indicate interactions among groups. Different colors of the group members represent different groups of participants. For example, in doing out-of-class group assignments or research, three students with green colors are in the same group. However, during in-class group discussion or presentation, these three students may select to join different groups. As you can see in our example, two “green” students are still in the same group during in-class discussion but the third “green” student has selected to partner with another “red” student. This means participants can select to join different groups during different phases of group studies.

As we know that the traditional teaching methods encourage one-way communication. Therefore, students are placed in a passive role and the instructor has difficulties in obtaining instant feedbacks, especially verbal feedbacks. Group study model can help overcome the disadvantages of such traditional teaching methods. Learning in a group can fulfill the diverse needs from diverse student audiences. Group study model makes the class offered as a combination of instructor lead and self-paced study process [25]. Generally, students can find suitable group members and become co-learners in discovering what work the best for them individually and as a group. For the students who either have trouble following instructor’s lecture, or have no problem grasping the main points of the lecture, they can enhance their understanding on the new knowledge and correct the misunderstanding of their old knowledge by attending group discussions. For students who want to develop their leadership ability, they can act as managers during their group discussions.

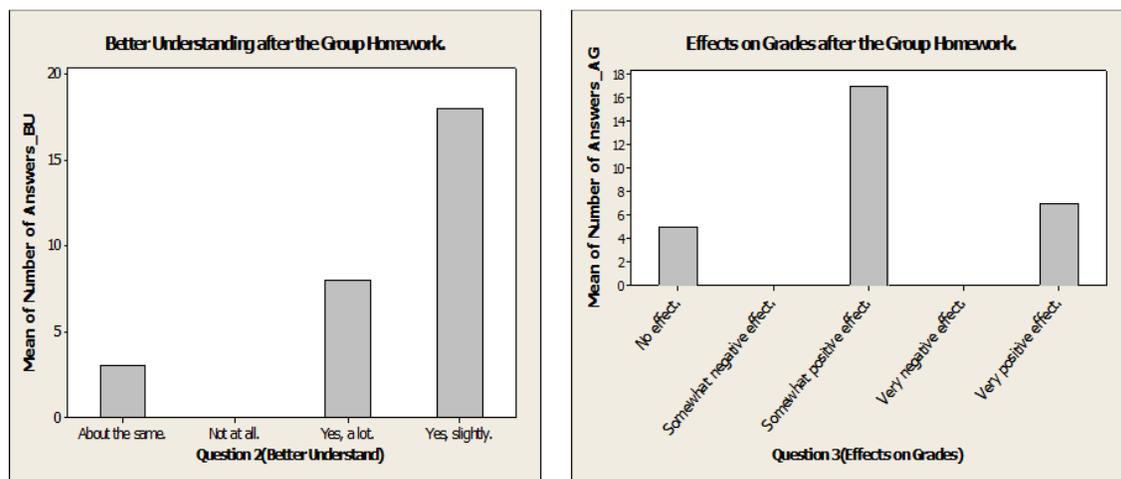


Figure 2. The effects of group homework on students’ understanding and grades. Data resource: “Survey on Group Assignment-College Algebra”.

Group study model improves teaching and learning performance. To improve the quality of group study model, the complementary strategies should be used in the same class. For example,

in-class discussions may occupy a significant amount of lecture time; students who couldn't digest the new knowledge well would have trouble to be involved into the in-class discussions; there are only limited comprehensive and advanced questions which are fit for individual homework. For However, these shortcomings can be overcome by adopting effective group discussion techniques [18, 19, 22] and by the extended out-of class homework discussions. Figure 2 shows the survey results about group homework on students' understanding and grades assigned at the last day of the college algebra class. According to the survey results, the group homework has positive effects on those who are actively involved in the group discussions; for those who are merely involved in the group discussions, the effects are limited or unclear. This is why it is important for the instructors to attend student's group discussions to promote students' involvement in the group discussions.

## 2. Experimental Methods and Quantitative Results

The Randomized Controlled Trial (RCT) [26-28] method is widely used in the areas of educational research, particularly in effectiveness research. In this method, students are randomly assigned as Before-Treatment students (BF) as the control group, and after-treatment students (AF). In the following, AF students are those who are required to do in-class group discussion and finish their group homework; BF students are those who are required to finish all of their homework problems individually. To maximize validity and minimize bias [29, 30], the instructor designs and publishes course plan at the beginning of each semester when the students and the instructor have limited knowledge of each other's. In this way, a performed double blind study [31] could ensure the random assignment.

### 3.1 Grade comparison between AF students and BF students for Trigonometry

In one Trigonometry class, students are required to finish all their homework individually. This class is used as control group. In the other Trigonometry class, students are required to do in-class discussions related to instructor's lectures and finish a portion of their homework in a group before taking the midterm tests and the final exam, except for midterm test 3. This class is used as experimental group. Both classes have more than 20 participants. The textbook, lecture notes, assigned homework questions, and exam questions are identical for both classes. Students from the experimental group work on the lecture questions with in-class discussions; and they use regular class time to finish one of their out-of-class homework questions and earn credits; the students in a group will get the same grades for the group homework. On the other hand, students from the control group obtain explanations from the instructor on all the lecture questions. To better compare the results, for midterm test 3, both groups use the same individual study strategy without using group study model.

Figure 3 shows the grade comparisons from all the exams between the experimental group and the control group respectively. The analysis is conducted using the Minitab [32] statistical analysis tool. The comparison shows that the AF medians/means of midterm test 1, midterm test 2 and final exam are significantly higher than those of BF. The differences between the two groups in mean values are significant ( $p < 0.05$ ). Also there are substantially variances in experimental groups. Outliers appear in control groups and disappear in experimental group after test 3.

There exists an inconsistent result for midterm test 3 grades ( $p > 0.05$  shown in red color in Figure 3). This is because there is no assigned group homework before the test for the experimental group. This result again shows strong evidence that doing group problems in and out-of class can improve students' grades.

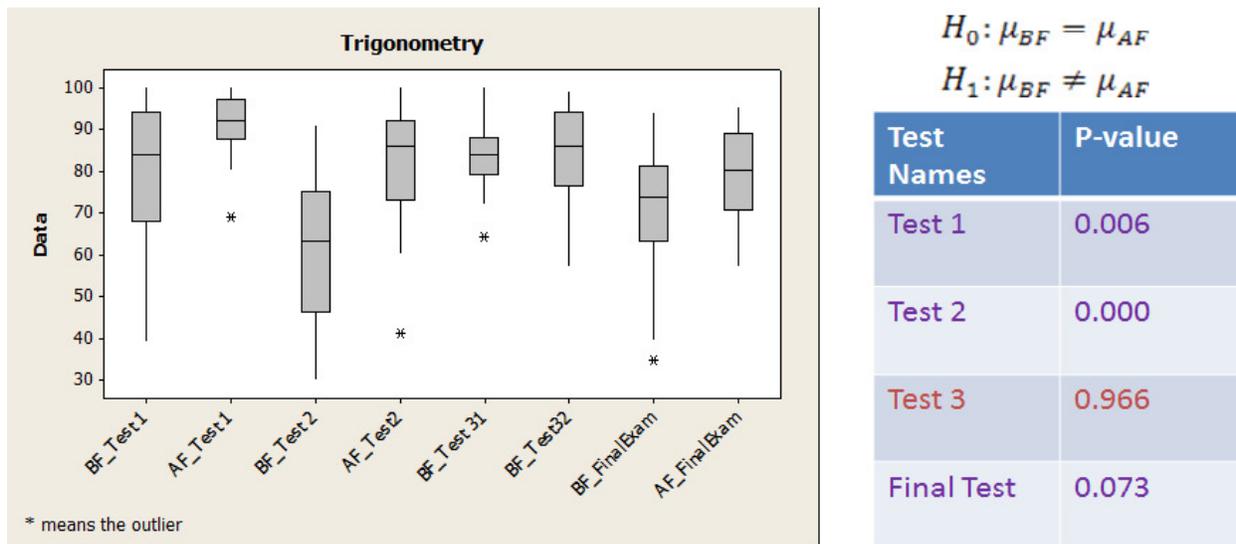


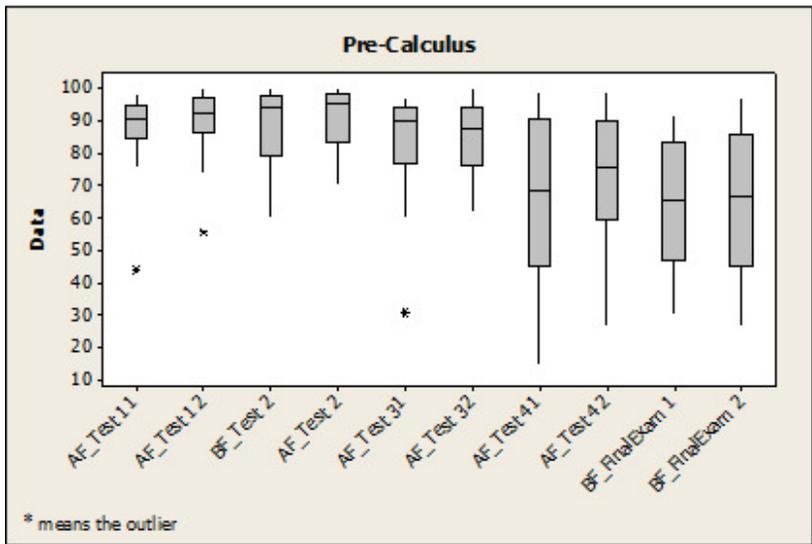
Figure 3. Comparison of student grades between the experimental group and the control group. Left: grade comparison charts; Right: p-values for each of the midterm tests and final exam. BF\_Test31 and BF\_Test32 represent the grades from the two groups for test 3 without using group study model.

### 3.2 Grade comparison between AF students and BF students for Pre-Calculus

This experiment is designed as follows. All classes have more than 20 participants. In Spring 2010 Pre-Calculus class, in-class discussions and three out-of-class group assignments are carried out before the midterm test 1, test 3, and test 4; no group study is used before test 2 and final exam. In Fall 2011 Pre-Calculus class, in-class discussion and out-of-class group assignments are carried out before all the tests except final exam. Also enhanced online individual homework is assigned except the hand in individual homework. Figure 4 shows the grade comparison from all the exams between the two classes respectively. The analysis is carried out using the Minitab tool.

Figure 4 shows that the AF median/ mean of midterm test 2 in Fall 2011 is higher than that of BF in Spring 2010. For the rest, the differences between the two semesters grades in mean values are not significant ( $p > 0.5$ ). This is due to that the same study model is used for both classes before those tests except for midterm test 2. Outliers disappear after test 3 in both classes.

In Fall 2012, in-class discussion and out-of-class group assignments are carried out before and after all of tests after test 1. From the grades of the first three tests, the level of Fall 2012 students were below those of the students in Fall 2011. However, as students work together after test 1 in groups throughout the rest of the semester in Fall 2012, their grades were generally improved and exceeded those in Fall 2011.



$$H_1: \mu_{BF} \neq \mu_{AF}$$

$$H_0: \mu_{BF} = \mu_{AF}$$

Test Names	P-value
Test 1	0.532
Test 2	0.325
Test 3	0.699
Test 4	0.588
Final Test	0.986

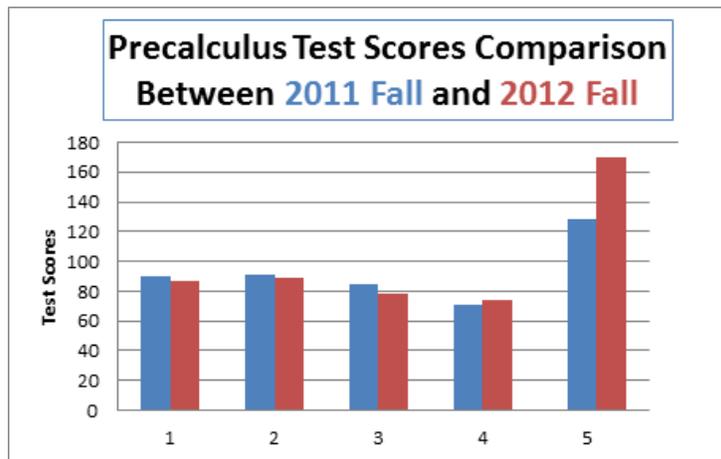


Figure 4. Comparison of student grades for all exams between two Pre-Calculus classes in Spring 2010 and Fall 2011, respectively. Top-Left: grade comparison charts; Top-Right: p-values for each of the midterm tests and final exam. AF\_Test11 and AF\_Test12 represent the grades from the two groups for test 1 using group study model. Bottom: Comparison of student grades for all exams between two Pre-Calculus classes in Fall 2011 and Fall 2012, respectively.

### 3. Future Research

Future studies are needed in order to improve the attendance of out-of-class homework, since not every student could be effectively involved in all group studies due to personality, time conflicts, or other reasons. Further research will focus on investigating the relationship between students' performance in the experimental group with their degree of participation. Other research may include improving individual student's group working skills to make the group work more productive.

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# RoboParade: a Fun and Effective Way to Promote STEM Education

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## Abstract

RoboParade is an annual event in which students design, build, program, and decorate autonomous robotic floats that follow a parade route. The students must program their robots to obey a speed limit, follow a black line, and avoid other robots using sensors. RoboParade provides a hands-on experiential approach where students may improve learning science, technology, engineering and mathematics (STEM) skills. A controlled experiment shows that students who participated in RoboParade 2012 showed greater improvement on a pre-post STEM multiple choice test compared to students who did not participate.

## Introduction to RoboParade



(Figure 1) Thanksgiving RoboParade 2012 at Macomb Community College Expo Center in MI

RoboParade is a program to engage, inspire, challenge, and prepare 4th-12th grade students to pursue careers in Science, Technology, Engineering, and Mathematics (STEM). RoboParade was built on the experience and infrastructure of Robofest ([www.robofest.net](http://www.robofest.net)), an annual autonomous robotics competition originated at Lawrence Technological University (LTU) for pre-college students [Chung & Sverdlik 2001, Chung & Anneberg 2003, Chung 2005, Chung 2006, Chung 2007, Chung 2008, Chung 2009, Chung 2010, Chung & Cartwright 2010, MacLennan 2010, Chung 2011a, Chung 2011b, Chung & Cartwright 2011, Crocker 2011, Chung & Cartwright 2012].

RoboParade was developed in 2006 after recognizing the following issues from Robofest competitions:

- It seems too late for many students to develop an interest in STEM-related subjects by the time they reach late high school grades. Research has shown that early exposure to STEM initiatives and

activities positively impacts students' perception and dispositions [Dejarnette 2012; Bagiati, Yoon, Evangelou & Ngambeki, 2010; Bybee & Fuchs 2006]. Since older students lose interest in math and science [Ward-Able & Lewis 2012, Gordon 2011], [Swift & Watkins 2004] emphasize that "effective science and mathematics instruction must begin in the early grades." Students who express interest in STEM in eighth grade are up to three times more likely to ultimately pursue STEM degrees later in life than students who do not express such an interest [Tai, Liu, Maltese & Fan 2006; PCAST 2010].

- Tightly defined robotics competition rules may limit students' imagination and creativity. Fred Martin, one of the inventors of LEGO robots, suggested open-ended exhibitions might promote more creativity than fixed game competitions [Martin 2000].
- There is a need to support more local underrepresented students, especially within the city of Detroit. Statistics show that the high school graduation rate was below 50% in Detroit [Wilk 2009].
- Women are still underrepresented in fields such as engineering, computer science, and the physical sciences [National Science Board 2010, PCAST 2010].
- Some researchers found female students in particular are more likely to appreciate learning with robots than traditional STEM teaching techniques [Nourbakhsh et al. 2005, Rogers & Portsmore 2004].

Our annual RoboParade was designed to complement the competition-oriented Robofest, targeting younger students and inner city teams by providing an entry level robotics program into STEM, and freeing them from the stress of competition. The required tasks are relatively simple – line following and obstacle detection. Believed to be the world's only *autonomous* robot parade, this event has featured miniature robotic floats with moving parts, sparkling lights, and all sorts of bells and drums rolling down a parade route without remote controls (see Figure 1). RoboParade videos since 2006 can be found online at <http://www.robofest.net/roboParade.htm>

The artistic and non-competitive nature of the event seems to attract more female participants, with over 30% female participation rate as opposed to 25% in Robofest competitions [Chung & Cartwright 2012].

## **Intended Learning Outcomes**

Basic RoboParade requires an autonomous robotic float to follow a line. If it detects another robotic float in front, the robot must stop, wait, and re-start when it is cleared without any human help. In addition, the robot must observe speed limits, minimum 7 cm/second and maximum 17 cm/second. It is also required to display current average speed. Through these tasks, students are learning, experiencing, and reinforcing STEM subjects such as proportion, arithmetic operation, arithmetic mean, linear function, unit conversion, ratio, circles, logic, data analysis, speed calculation, sensors, gears, motors, force, friction, center of gravity, and many others. To join the official parade, teams must pass a qualifying test that includes a written qualifying exam. (see Appendix)

## **RoboParade 2012 Assessment Results**

### **1. Research Question**

Hypothesis  $H_1$ : Students who participate in the RoboParade have higher STEM scores than students who do not participate. RoboParade program improves STEM scores.

Null Hypothesis  $H_0$ : There is no statistical difference in STEM scores between RoboParade students and students who do not participate in the program. RoboParade students do not have higher STEM scores than non RoboParade students. RoboParade program does not improve STEM scores.

Independent variable: Group membership - participation in the RoboParade program (the experimental group) vs. no participation in the RoboParade program (the control group).

Dependent variable: STEM scores on mathematics, science, engineering, and computer technology multiple choice test.

## **2. Assessment Methodologies and Tools**

$H_1$  was tested by administering similar pre- and post-assessment tests to an experimental group and a control group (cf. Barker & Ansorge, 2007; Trudell & Chung, 2009).

An eight-item multiple choice test was developed for the anonymous pre-assessment. The following STEM topics were covered in the test:

- Five 5<sup>th</sup> ~ 8<sup>th</sup> grade level math questions relating to proportion, arithmetic operation, arithmetic mean, linear function, unit conversion, ratio, and circles based on the Grade Level Content Expectations (GLCEs) for Michigan public schools.
- One question relating to gears (engineering)
- One question relating to robot sensors (science)
- One question relating to logic and computer programming (technology)

The test also included demographic questions, which determined student grade, gender, and STEM subject interest. (see Appendix)

The post-assessment test had the same questions but they were modified while maintaining the same difficulty level. (see Appendix)

## **3. Procedure**

This research was approved by the Institutional Review Board at Lawrence Technological University. This time, we conducted pre- and post-assessments using only paper, not online, tests.

Two schools were chosen to obtain control group students: one in a suburban area and the other in downtown Detroit. Teachers from each school invited a class to complete the pre- and post-assessments.

The pre-assessment test for the experimental group was given October 12 and 13, 2012 to students who participated in RoboParade workshops at LTU. Additional RoboParade students joined the research on November 5 and 9.

The post-assessment for the experimental group was conducted the same day as RoboParade, November 17, at Macomb Community College. Four teams who were unable to attend RoboParade participated in the post-assessment on November 27.

The pre-assessment test for the control group was given October 23 and 24, 2012 during class at two schools.

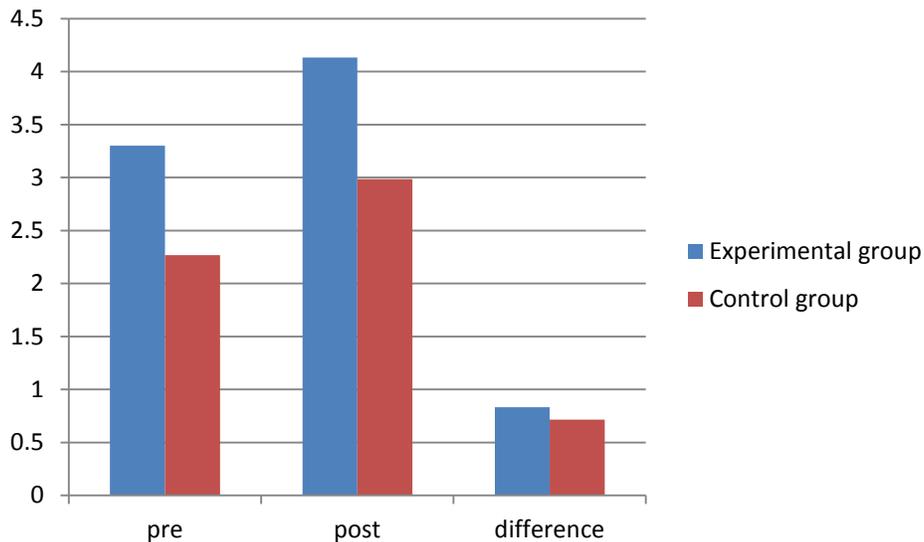
The post-assessment test for the control group was given November 29 and 30, 2012 during class at two schools.

#### 4. Results

STEM scores from 4th-10th grade experimental and control group students were analyzed. The following table shows the data from the sample populations.

		Experimental Group	Control Group
Pre Assessment	Population size	63	67
	Mean school grade	6.25	5.94
	Mean test score	3.30	2.27
	Median	3	2
	Standard deviation	1.71	1.37
Post Assessment	Population size	60	62
	Mean school grade	6.1	5.93
	Mean test score	4.13	2.98
	Median	4	3
	Standard deviation	1.48	1.38
Unpaired <i>t</i> -test probability		0.0047	0.0038
Mean test score difference (improvement)		0.83	0.72

As shown in the data above and Figure 2 below, RoboParade students' mean STEM scores improved from 3.30 to 4.13 ( $p < .0047$ ). We also found that the improvement of the Robofest group is greater than that of the control group ( $0.83 > 0.72$ ). These results suggest  $H_0$  can be rejected in favor of  $H_1$ : STEM scores are improved through participation in RoboParade programs.



(Figure 2) RoboParade 2012 STEM assessment results

## Conclusion

RoboParade is a fun activity designed to encourage students at a critical age to consider careers in STEM. RoboParade is an entry level robotics event, and targets younger students and underrepresented students (inner city and female), who tend to lose interest in science and mathematics before high school. RoboParade has been shown to be effective for STEM learning in a controlled experiment in which students that participated in RoboParade had increased gains in STEM scores compared to students who did not participate. We believe the speed display requirement and the written qualifying test asking about

speed calculation (Appendix 4) embedded into RoboParade program contributed to the greater improvement of the RoboParade group.

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## Appendix

The following documents were used for RoboParade 2012 season in Michigan from Oct ~ Nov, 2012. The final Thanksgiving RoboParade was held at Macomb Community College Expo Center on November 17, 2012.

1. *RoboParade Pre-Assessment*
2. *RoboParade Post-Assessment*
3. *RoboParade Qualifying Test Checklist 2012 - List of qualifying tasks to join the official RoboParade*
4. *Written Qualifying Test*

# 1. RoboParade Pre-Assessment, 2012

This assessment can only be taken one time, once you have submitted it you cannot take it or view it again. This assessment will be completely anonymous.

---

## \* Required

Q1\*What grade are you in?

- 4th Grade or Below
- 5th Grade
- 6th Grade
- 7th Grade
- 8th Grade
- 9th Grade
- 10th Grade to 12th grade

Q2\*What is your gender?

- Male
- Female

Q3\*Are you interested in a career or job involving Science, Technology, Engineering, or Mathematics? (one or more of the four areas?)

- Not at all interested
- Probably not
- Not sure
- Somewhat interested
- Very interested

Q4\*If your dad drives 60 miles per hour for 2 hours, how many miles did he drive?

- 30
- 60
- 120
- 3600
- I don't know

Q5\*If at noon your mom's car is at mile marker 20 and at 2:00 PM your mom's car is at mile marker 100, what is the average speed of your mom's car?

- 20 miles per hour
- 40 miles per hour

- 80 miles per hour
- 100 miles per hour
- I don't know

Q6\* A toy car moves forward 15 cm for one rotation of two identical wheels. How many rotations are needed for the same toy car to move forward 75 cm?

- 5
- 15
- 60
- 75
- I don't know

Q7\* Choose one that is *not* correct

- 5.4 is greater than 13.0
- 5.4 is less than or equal to 13.0
- 1.8 is less than or equal to 1.8
- 2 is greater than or equal to 1.8
- I don't know

Q8\* What is the radius of a circle when its circumference is 30 cm?

- 3.09 cm
- 3.14 cm
- 4.77 cm
- 9.55 cm
- I don't know

Q9\* A toy car has a wheel with a diameter of 5 cm. How many rotations of the wheel are required for the car to travel a distance of 30 cm?

- .95 rotations
- 1.91 rotations
- 6 rotations
- 9.55 rotations
- I don't know

Q10\* If a big gear is driving a little gear (this is called gearing up), then the little gear will

- Spin faster, and have decreased torque
- Spin slower, and have increased torque

- Spin faster, and have increased torque
- Spin slower, and have decreased torque
- I don't know

Q11\*If you use a light sensor with reflected light mode, which of the following will reflect the greatest amount of light back to the sensor

- black electrical tape, 2cm away
- black electrical tape, 10 cm away
- white computer paper, 2 cm away
- white computer paper, 10 cm away
- I don't know

Submit

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## 2. RoboParade Post-Assessment 2012

This assessment will be completely anonymous.

---

\* Required

Q0\*Did you take RoboParade Pre-Assessment this fall 2012 during the workshop at LTU \*or\* your school (Winans Academy, Southfield Christian, MCS, or FLIC)?

- Yes; Go on to the next question
- No; Do NOT take this test

Q1 \*What grade are you in?

- 4th Grade or Below
- 5th Grade
- 6th Grade
- 7th Grade
- 8th Grade
- 9th Grade
- 10th Grade to 12th Grade

Q2 \*What is your gender?

- Male
- Female

Q3\* Are you interested in a career or job involving Science, Technology, Engineering, or Mathematics? (one or more of the four areas?)

- Not at all interested
- Probably not
- Not sure
- Somewhat interested
- Very interested

Q4\* If your dad drives 50 miles per hour for 2 hours, how many miles did he drive?

- 25
- 50
- 100
- 250
- I don't know

Q5\* If at 1:00PM your mom's car is at mile marker 30 and at 3:00 PM your mom's car is at mile marker 150, what is the average speed of your mom's car?

- 30 miles per hour
- 60 miles per hour
- 120 miles per hour
- 180 miles per hour
- I don't know

Q6\* A toy car moves forward 10 cm for one rotation of identical wheels. How many rotations are needed for the same toy car to move forward 40 cm?

- 4
- 16
- 48
- 80
- I don't know

Q7\* Choose one that is \*not\* correct

- 12 is greater than 9.8
- 9.8 is less than or equal to 12

- 3.4 is less than 5.7
- 5.7 is greater than or equal to 9.8
- I don't know

Q8\*What is the radius of a circle when its circumference is 20 cm?

- 2.52 cm
- 3.18 cm
- 6.37 cm
- 125.66 cm
- I don't know

Q9\* A toy car has a wheel with a diameter of 6 cm. How many rotations of the wheel are required for the car to travel a distance of 48 cm?

- 1.27 rotations
- 2.55 rotations
- 8 rotations
- 15.23 rotations
- I don't know

Q10\*If a little gear is driving a big gear (this is called gearing down), then the big gear will

- Spin faster, and have decreased torque
- Spin slower, and have increased torque
- Spin faster, and have increased torque
- Spin slower, and have decreased torque
- I don't know

Q11\*If you use a light sensor with reflected light mode, which of the following will reflect the least amount of light back to the sensor

- black electrical tape, 1 cm away
- black electrical tape, 10 cm away
- white computer paper, 1 cm away
- white computer paper, 10 cm away
- I don't know

Submit

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### 3.



## Qualifying Test Checklist 2012

Team-ID: \_\_\_\_\_

Team Name: \_\_\_\_\_

Test Item	Details	Pass / No Pass	Note
Line following	Clockwise, counter-clockwise		
Object Detection	Wait and restart		
Speed display			
Speed limit	7cm ~ 17cm		
Rear bumper	1" high from the floor; at least 5"x2.5"		
Length (a unit)	Less than 35cm		For a float with multiple trailers following it, each 35 cm long is OK
Written exam			

Flag Number Assigned: \_\_\_\_\_ (without passing Written exam, a team may get a flag)

Judge Signature: \_\_\_\_\_

## 4. Written Qualifying Test

### RoboParade Quiz (Type A)

Team ID: \_\_\_\_\_

Team Name: \_\_\_\_\_

Student Names: \_\_\_\_\_

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Q1. The above toy car drove straight 8 wheel rotations for 4 seconds. What was the average speed (cm / sec)? The circumference of the wheels is 20cm. Assume there is no slip or idle rotations.

Q2. How many centimeters will it drive forward straight for 5 seconds if the average speed is 15cm per second? Assume there is no slip or idle rotations.

**Title of Submission:** CAPSTONE OPTIONS AND GRADUATION RATES: A CASE STUDY

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## CAPSTONE OPTIONS AND GRADUATION RATES: A CASE STUDY

### Abstract

In a time of lower enrollments in programs designed for adult learners, graduate faculty members and program administrators are looking for ways to increase graduation rates thus retain students in programs. This paper is a case study describing how the faculty of a MA degree program at Regis University discovered factors contributing to a lower than expected graduation rate and how a change in one component of the program has helped to resolve that problem. A new and unique course was developed to provide an alternative for students to complete their capstone requirement, while retaining the academic rigor and quality of the program. The course is described as well as its impact on and contribution to an increasing graduation rate for the program.

### Background

Regis University is a Jesuit institution located in Denver Colorado. The university comprises colleges: Regis College (traditional student), Rueckert-Hartman College for Health Professions, and the College for Professional Studies. The College of Professional Studies (CPS) comprises four schools: Management, Education and Counseling, Computer and Information Sciences and Humanities and Social Science. All three colleges share the same Regis University (2013) mission:

Regis University educates men and women of all ages and faiths to take leadership roles and to make a positive impact in a changing society. Standing within the Catholic and United States traditions, we are inspired by the particular Jesuit vision of Ignatius Loyola. This vision challenges us to attain the inner freedom to make intelligent choices. We seek to provide value-centered undergraduate and graduate education, as well as to strengthen commitment to community service. We nurture the life of the mind and the pursuit of truth within an environment conducive to effective teaching, learning and personal development.

Consistent with Judeo-Christian principles, we apply knowledge to human needs and seek to preserve the best of the human heritage. We encourage the continual search for truth, values and a just existence. Throughout this process, we examine and attempt to answer the question: "How ought we to live?"

As a consequence of Ignatius Loyola's vision, particularly as reflected in his Spiritual Exercises, we encourage all members of the Regis community to learn proficiently, think logically and critically, identify and choose personal standards of values, and be socially responsible. We further encourage the development of the skills and leadership abilities necessary for distinguished professional work and contributions to the improvement and transformation of society.

Within the CPS School of Humanities and Social Sciences, the individualized Master of Arts (MA) program is an innovative program that began in 2005 to serve students who could not find a graduate degree to match their goals and interests. The MA mission and goals (Regis University, 2013) reads:

Regis University's Master of Arts degree provides an individually designed, multidisciplinary and academically rigorous program for students to plan a course of study unique to their own graduate learning needs. The MA degree is designed for each individual learner and focused on achievement of learning outcomes designated by each student. The MA is a flexible, student-centered program that enhances students' educational choices for intellectual, professional, and personal growth. A collaborative working relationship with the faculty advisor assists students to discover new perspectives and insights. Rather than take a disciplinary or occupational approach, the focus of this degree is on getting learners back in touch with foundational ways of thinking, engaging both right and left brain hemispheres. Courses and degree programs in the MA are designed to use a variety of learning activities and focused on whole brain engagement. Courses are delivered to students in the classroom, online and by Directed (Independent) Study. Goals of the MA degree are:

1. **Communication:** The student will exhibit graduate level, written, verbal, auditory, and visual, communication skills appropriate for their discipline, and will demonstrate the ability to use contemporary technology as a tool in effective communication. The student will communicate at a professional level that demonstrates mastery of his or her discipline.
2. **Content Knowledge:** The student will demonstrate mastery of the discipline content and the subject matter. Their final portfolio will demonstrate the relationship of course content to practical examples and applications. The student will provide comprehensive, in depth analysis of details, facts, and concepts in a logical sequence.
3. **Critical Thinking:** The student will demonstrate higher-level of critical thinking necessary for graduate level work. The student will present examples of problem solving or critical thinking, while drawing logical conclusions that are not immediately obvious. The student will develop genuine intellectual ideas and appropriately support them with facts, arguments, examples, world view illustrations, and reflection.
4. **Life Long Learning:** The student will demonstrate commitment to the principles of lifelong learning by setting clear and attainable goals and defining pathways to achieving success.
5. **Ethics and Diversity:** The student will demonstrate a clear understanding of and a commitment to ethical decision making in a diverse world.
6. **Service to Others:** The student will demonstrate a clear understanding of and a commitment to leadership in serving others.

The unique aspect of the MA degree is that degrees are built using the interdisciplinary content available across the College of Professional Studies. This allows students to use courses from any graduate degree programs offered by Regis, and to build Directed Study courses if no appropriate course exists. Each individual student program is built on student career goals that are discussed and documented during the first advisor meeting. There are currently 435 students divided between 1 full-time, three 0.75 and one 0.5 faculty advisors.

Each student meets with an advisor as soon as they are accepted into the program. During this meeting students write out three major learning goals for the degree. Together with the advisor courses are chosen to meet these goals. Some courses are chosen from existing courses offered at Regis University. If some of the necessary courses do not exist at Regis, students have the option of transferring in up to six credits (two courses), or designing coursework in a Directed Study format. The use of Directed Study allows students to fine tune the degree to very specific learning goals. Since the learning goals of students vary widely, so do their specializations. However, specializations are related limited to those related to the Humanities and Social Sciences

Tying these disparate degrees together are the core courses: MAPC 601 Graduate Research, MAPC 602 Ethics and Multiculturalism, which are cornerstone courses; MAPC 603 Interdisciplinary Studies, which is a keystone course; and MAPC 688/696 or MAPC 694, which are the capstone options.

The capstone options were designed originally as a two course series that would provide a forum for students to demonstrate mastery of a discipline. Students had a variety of options ranging from a creative project (art or writing) to a literature review based research project, to an internship or experiential project. These options were highly successful for some students, but were also, unfortunately, overwhelming for others. Many students were struggling to develop and complete a capstone project in 16 weeks, resulting in many students not completing their degree.

### The Problem

The MA program has been operational for eight years and has conducted regular assessments of academic performance of its students in an annual review of the quality of written work submitted in the core courses and the quality of capstone projects. Early assessments (2005 – 2007) of graduation rates were conducted, indicating that approximately 60 percent of MA students starting the program were graduating, however, in recent years no regular assessments of the rate at which students were graduating from the program were conducted. No specific, disaggregated data describing graduation rates were available until 2012. Recent program assessment data for the MA degree revealed that average time to

degree completion was 2.9 years in 2007 and 2008 while it was 2.5 years in 2009 and 2.2 years in 2010 (See table 1 below).

**Table 1. Average Years to Complete Degree**

Year	Count	Years to complete
2007	50	2.9
2008	66	2.9
2009	52	2.6
2010	29	2.2

Research conducted by Collins, Coddington and Williams (2012) involved examination of graduation rates of students in Regis University CPS master's degree programs. The MA degree was one of four master's degree programs at Regis University included in this study. One of the findings of this study was that for a period of three years (2008 – 2010) a significant number (37%) of MA students completed all but the capstone/thesis requirements for the degree and did not graduate. The authors believe that this statistic is one possible explanation for the fairly dramatic drop in average time to completion between 2008 and 2010. One of the recommendations of the Collins, Coddington and Williams (2012) study was to examine the possibility that stringent capstone requirements were a roadblock to graduation (p.22). Therefore we concluded that the problem in this case study project is that since current and reliable data regarding graduation rates for the MA degree were not examined and since a high percentage of students reaching the end of their MA degree did not graduate in 2008 through 2010, that students were not graduating at acceptable rates.

#### Analysis of the Problem

The MA faculty met in September, 2011 to discuss this problem and begin looking for a solution. While no additional data was collected to help define the source of the problem at that time, the need was confirmed through anecdotal experiences of faculty members. Discussion of possible solutions was initiated. While the faculty was interested in finding a solution they were clear about retaining the rigor and success of the program while at the same time finding a way to ensure that students succeed. The

faculty designated one member to examine models for completing master's degree requirements at similar colleges and universities and bring forward a proposal.

The models examined included some programs in which requirements were similar (two courses) to those of the MA program, while others required the development of a research proposal that did not require enrollment, followed by a 3 credit course, and yet other programs that required a comprehensive examination followed by a thesis requirement of 3 – 9 credits. This evaluation of completion requirements included both capstone projects and thesis projects. Generally, the faculty member who conducted this review found no model that that appeared to retain the rigor of a final master's project/thesis while providing students with an optional way to demonstrate mastery. Further discussion among the faculty resulted in a decision to explore possible ways to incorporate the concept of comprehensive examinations into a single course that would retain rigor and provide an alternative way to complete the capstone requirement of the MA degree.

#### Addressing the Problem

A course proposal was developed and brought to the faculty and the department chair for discussion and approval. The proposed course title was MAPC 696 MA Comprehensive Capstone. The intended purpose of the course was to infuse the concept of comprehensive examination into a single course that allowed students to demonstrate mastery of their specialization by writing comprehensive responses to questions posed by the faculty and by the student. While most master's capstone and thesis projects focus on a single component of what the student learned in their specialization, the intent of this course was to allow the student to demonstrate their learning in a broader context. Thus a new course proposal was developed. The course was designed as an accelerated classroom based course meeting one evening a week for eight weeks. The proposed course syllabus was approved by the faculty and the department chair to be offered first as an experimental course and was to be revised and approved for additional offerings. The initial course syllabus is located in Appendix A.

The course was subsequently revised to be offered in a week-end intensive format by another member of the faculty. The week-end intensive format was also accelerated in that it is offered within an

eight week term however classroom meeting times were scheduled for eight hours daily on two Saturday/Sunday weekends. The total classroom meeting time was the same (32 contact hours) as for the one evening per week schedule. Minor changes were made in the content of the course however course assignments were changed significantly to allow for a stronger focus on writing comprehensively in response to questions posed by the faculty and enrolled students. Note in the syllabus under the week 5 and six assignments that students were asked to submit appropriate and relevant questions on which to write, given their specialization. In addition, an online course companion shell was added to the course providing students with a place to engage in an ongoing asynchronous discussion between classroom sessions. The revised syllabus is located in Appendix B.

Subsequently the revised course was offered at least once each semester for a year, with additional minor refinements in language, specifically in the descriptions of each of the four required assignments. Discussion questions were added to the online course companion shell for each of the eight weeks of the course. Further, more specific requirements were added for participation in the online discussions. In the most recent course offering, (Summer 2013) the University designated this course as a pilot blended course, the intent of which was to pioneer a new format for the CPS School of Humanities and Social Sciences, and to clear the way for development of other courses into a blended format that included both online and classroom components. Thus the course underwent further revision that upgraded and refined the classroom meeting sessions as well as the online portion of the course. Note that course outcomes were refined and the course assignments were clarified and made more specific. In addition the online components of the course were expanded so that the course included at least as much asynchronous activity as synchronous. To bolster the synchronous activity of the course both distant and local students were asked to participate in the final presentations using Adobe Connect in a way that allowed all students to see and participate in responding to all presentations. The syllabus for the blended course is located in Appendix C.

## Evaluation and Discussion

The original purpose of developing and offering MAPC 694 was to offer an alternative to students for completion of their MA degree, while at the same time to maintain the rigor, quality and success of the MA program. Since the major problem identified by the faculty was that many students were successfully completing their course content requirements and failing to complete their capstone requirements, the next step for the authors was to evaluate the success of the course in addressing its purpose and objectives. In short, we wanted to determine if graduation rates were actually increasing as a result of offering students this option.

The authors collected data from student records regarding graduation rates prior to and after the inception of MAPC 694 Comprehensives Capstone. A cohort model for examination of the data was used. This model followed students who enrolled in the MA program each year from the time of their initial enrollment to the time of their graduation. The table below presents graduation rates using this model:

**Table 2. Graduation Rates by Academic year**

Academic Year	Number in Cohort	Number graduated	Rate
2006 – 07	76	47	62%
2007 – 08	88	56	64%
2008 – 09	121	82	68%
2009 – 10	102	74	73%
2010 – 11	92	75	82%

While the table indicates a clear trend toward higher graduation rates for this period, data is still not available for academic years 2011 – 12 and 2012 – 13. This data is simply not complete yet as the average time to completion of degrees for MA students is 2.2 years. Thus cohorts that include students starting during these last two years would not have been enrolled in the program long enough to provide an accurate graduation rate. However, Table 2 does clearly indicate a relatively high graduation rate is being achieved in this program.

The authors also examined data consisting of the number of graduates in each of the cohorts above and how many of those graduates completed a traditional two course capstone project and how many completed the new Comprehensives Capstone course. The table below presents this data:

**Table 3. Comparison of Students Completing Traditional vs. New Capstone Courses**

Academic Year	Traditional Capstone Students	New Capstone Students	Total
2009 – 10	48		48
2010 – 11	56		56
2011 – 12*	72 (83%)	12 (17%)	84
2012 – 13	50 (65%)	26 (35%)	76

\*MAPC 694 Comprehensives Capstone was first offered in Fall, 2011

Note that MAPC 694 Comprehensives Capstone made a significantly stronger contribution to the numbers of students completing capstones each academic year since its first offering in 2011. While it is not possible with the current data to determine the number of students who might not have completed their MA degree without the Comprehensives Capstone option, the data does suggest that the new capstone option is having a positive impact on the number of students graduating from the MA degree. The data does demonstrate that graduation rates have been steadily increasing (see Table 1) and the Comprehensives Capstone course has made a progressively stronger contribution (See Table 2) to the number of students completing capstones in the two most recent academic years.

While this paper does not present conclusive evidence that Comprehensives Capstone improved the graduation rate of the MA degree, the data does suggest that it has made a significant contribution improving the results of the degree. The authors recommend that relevant data collection and evaluation should continue in an ongoing effort to describe and document the contribution made by the Comprehensives Capstone course toward improving graduation rates for the MA program. In addition, relevant qualitative data still needs to be collected to discover whether students would have completed their degree using the traditional two course requirement and to illuminate the satisfaction of students with the course and its impact on what they took away from their MA degree.

## REFERENCES

Collins, Robert, Coddington, Jill and Williams, Dorothy (2013), The Relationship of Goal Setting to Persistence, Conference Proceedings, 2013 Hawaii International Conference on Education.

Regis University (2013) Mission Statement retrieved from: <http://www.regis.edu/About-Regis-University/History-and-Mission/The-Regis-University-Mission.aspx>

## Appendix A. Initial Course Syllabus

### MAPC 694 MA Comprehensive Capstone

#### Course Description

Students design discipline specific deep questions focused on core competencies in their subject areas, write graduate level responses, and integrate content from course work and research as necessary to provide a comprehensive response to each question. Questions include specific connections to the Regis Mission.

#### Course Goals

Students who have completed this course should be able to:

- Articulate the role of innovation in and across disciplines
- Analyze effective leadership across disciplines
- Evaluate ethical/spiritual issues across disciplines
- Compare and contrast rhetoric and critical thought across disciplines.
- Analyze a case study within a specific discipline.

This course will explore the following issues:

- Explore the ways that specific disciplines address the main elements of the Regis mission:
  - How ought we to live
  - Service to others
  - Learning brings up closer to God.
- Create and analyze case studies across disciplines
- Create a curriculum for teaching innovative approaches and applications of discipline
- Explore and apply design thinking.
- Explore the illusions of our disciplines.
- Explore leadership across disciplines

#### Course Prerequisites:

To be completed as the last course and requires advisor approval.

#### Required Course Text(s):

Handouts and articles on e-reserve

Regis Traditions booklet

#### Core Philosophy

This course is designed to celebrate the framework that makes Regis superior to other universities, the Regis Core Philosophy. When you read the questions and assignments, be aware that they embody the principles of Jesuit teachers, many of whom gave their lives, for publicly advocating such beliefs. Principles, such as *spreading knowledge, thinking critically, embracing personal standards, being socially responsible* and *becoming leaders in a quest to improve society*, are bequeathed to us by those

intrepid global educators. Classroom discussions, debates, documentaries, group projects and essay assignments are all designed with these principles in mind. They enable you to combine knowledge with principles, and apply to both your personal life and your world through analysis, synthesis and final evaluation. Embrace this section and use it to become a better learner today for tomorrow's challenges.

**Assignments:**

<b>Week</b>	<b>Topics</b>	<b>Readings— See content for details</b>	<b>Activities</b>	<b>Deliverables and Points</b>
One	Course Overview Regis Mission Discipline break-out	Regis Tradition booklet  Hero's journey	Discussions Small group presentation	
Two	Psychological and logical fallacies	e-reserve articles on psychological and logical fallacies	Discussion and classroom activities on reading	
			Short paper due on ethics or spiritual issues	
Three	Leadership How to present	e-reserve articles on leadership	Discussion and classroom activities on reading	
			Short paper due on fallacies	
Four	Innovation	e-reserve articles on innovation	Discussion and classroom activities on innovation	
			Presentation on leadership	
Five	Foundations of discipline Review of interdisciplinary perspectives	Article on discipline presented by student	Review of journal Article in class presentation	
			Discussion on interdisciplinary links	
Six	Preparation for presentations in symposium	Articles Pick topic for final presentation	Review of Journal Article	
Seven	Case study reviews	Articles	Review of Journal Article	
			Group activities on case studies	

Eight	Final presentations NOTE: presentation at symposium is required.	Articles	Final classroom presentation	
			Final Paper	
<b>Total Points</b>				

Criteria for assessing and grading will be discussed throughout the course. All products will be assessed with an emphasis on depth of understanding and connections made between content of readings and discussions.

## Appendix B. Revised Course Syllabus

### MAPC 694 MA Comprehensive Capstone

#### Course Description

Students design discipline specific deep questions focused on core competencies in their subject areas, write graduate level responses, and integrate content from course work and research as necessary to provide a comprehensive response to each question. Questions include specific connections to the Regis Mission.

#### Course Goals

Students who have completed this course will be able to:

- Demonstrate mastery of their specialization by creating thoughtful, analytical and comprehensive responses to questions posed by the facilitator and the learner.
- Articulate the role of innovation in and across disciplines
- Analyze effective leadership across disciplines
- Evaluate ethical/spiritual issues across disciplines
- Compare and contrast rhetoric and critical thought across disciplines.
- Analyze a case study within a specific discipline.

This course will examine the following issues:

- Explore and apply the ways that specific disciplines address the main elements of the Regis mission:
  - How ought we to live
  - Service to others
- Analyze case studies within the learner's specialization and across related disciplines
- Create innovative approaches to and applications of the learner's specialization or discipline.
- Explore leadership within the learner's specialization and across related disciplines.

#### Core Philosophy

This course is designed to celebrate the framework that makes Regis superior to other universities, the Regis Core Philosophy. When you read the questions and assignments, be aware that they embody the principles of Jesuit teachers, many of whom gave their lives, for publicly advocating such beliefs. Principles, such as *spreading knowledge, thinking critically, embracing personal standards, being socially responsible* and *becoming leaders in a quest to improve society*, are bequeathed to us by those intrepid global educators. Classroom discussions, debates, documentaries, group projects and essay assignments are all designed with these principles in mind. They enable you to combine knowledge with principles, and apply to both your personal life and your world through analysis, synthesis and final evaluation. Embrace this section and use it to become a better learner today for tomorrow's challenges.

**Course Prerequisite:**

This course is to be taken as the last or next to last course. Advisor approval is required.

**Required Course Material(s):**

Handouts

Regis Traditions booklet

**Other Course Materials:**

The student will use appropriate library resources to complete the written assignments.

**Course Assignments:**

**Week 1 and 2:** Prepare a 10 page paper (APA format) that describes the specialization you have completed as part of your MA degree. You may include a description of all courses you have taken to date and an overview of how they have contributed to the development of your knowledge and skills in your field of study. You may refer back to the material you developed for MAPC 603 Graduate Interdisciplinary Study (if you took this course) as a starting point. Please email this assignment directly to the facilitator by the Friday before the first class meeting. Also, prepare a presentation of this paper to take place during the first class meeting. At the end of your presentation be prepared to discuss how your knowledge and skills might be applied in disciplines (specializations) related to your own. You may use appropriate graphics to support your presentation. (25% of final grade) Post a self-introduction on the discussion forum. Please post questions or respond to other students' postings in a way that will help them feel welcome.

**Week 3 and 4.** The second paper for this course will be a response to the following question: As an expert in my field of study, how do I expect to apply Jesuit ideals and principles in my work and/or in other facets of my life? This paper should be a minimum of 10 pages in length (APA format) and should use the Traditions Booklet that will be provided in the first class meeting as a primary resource. Please include in your discussion how you see Jesuit ideals being applied in disciplines (specializations) related to your own. You may also add other resources as you find necessary and helpful. Please include a title page and reference page in addition to the text of your paper. Please submit your paper to the facilitator by Sunday evening of Week four. Please post in the discussion forum the questions you have about this assignment and or a draft of part or all of your response to the question at any time before the paper is due. Be prepared to discuss your paper at the second week-end class meeting. (25% of final grade)

**Week 5 and 6** Students will write a question and prepare a response to that question in a written paper of not less than 10 pages (APA format) plus title and reference pages. The question should integrate the concepts of innovation and leadership into how mastery of their discipline is to be achieved. The question should be approved by the facilitator by the end of week 4. The response paper can take any format deemed appropriate by the student. You may be innovative and creative in deciding about the format of the paper. Include in your paper a discussion of how you see innovation and leadership being applied in disciplines (specializations) related to your own. Please post in the discussion forum questions you have about this assignment and or a draft of part or all of your question or your response to the question at any

time before the paper is due. Be prepared to discuss your paper at the second week-end class meeting. (25% of final grade)

**Week 7 and 8** You have been asked to prepare and present a paper at a professional conference in your discipline. In most professional conferences presentations are made to a group of people attending the conference and are interested in learning more about the topic of the presentation. Prepare a paper (APA format) that is a minimum of 10 pages not including a title and reference page that is could be presented at such a conference. You may select a topic or issue about which you have specialized knowledge in your field of study. The paper should demonstrate your ability to analyze and synthesize information (describe how you make sense of complex information), to think critically (describe what is important and why) and to apply your knowledge to the challenges of the future (describe how you would apply your knowledge in your life or in your work. You may share your paper with other members of the class for feedback prior to submitting the final copy to the facilitator. Please submit the final copy of your paper by Friday of Week 8.. The facilitator will provide final feedback and your course grade the following week. (25% of final grade)

### **Presentation Requirement**

Learners will be asked to make a presentation of their final assignment. Arrangements for presentations will be discussed in the classroom meetings

## **Appendix C. Blended Format Course Syllabus**

### **MAPC 694 MA Comprehensive Capstone**

**COURSE TITLE: MA Comprehensive Capstone**

**COURSE NUMBER: MAPC694**

**COURSE DESCRIPTION:**

Students design discipline specific deep questions focused on core competencies in their subject areas, write graduate level responses, and integrate content from course work and research as necessary to provide a comprehensive response to each question. Questions include specific connections to the Regis Mission.

**PREREQUISITE COURSES:**

This course is to be taken as the last or next to last course. Advisor approval is required.

**COURSE OUTCOMES:**

Upon completion of this course, learners should be able to:

1. Create thoughtful, analytical and comprehensive responses to questions posed by the facilitator and the learner.
2. Articulate the role of innovation in and across disciplines.
3. Analyze effective leadership across disciplines.
4. Evaluate ethical/spiritual issues across disciplines.
5. Compare and contrast rhetoric and critical thought across disciplines.
6. Explore and apply the ways that specific disciplines address the main elements of the Regis mission (How ought we to live? Service to others)
7. Create innovative approaches to and applications of the learner's specialization or discipline.
8. Explore leadership within the learner's specialization and across related disciplines.

**COURSE MATERIALS:**

**Required Resources:**

The facilitator will provide an electronic copy of the Regis Traditions booklet to be used in preparing Assignment 2. In addition, other documents or links to those documents will be provided for use in preparing Assignment 3.

**Optional Materials:**

The student will use appropriate library resources to complete the written assignments.

Documents to help you prepare for Assignment 3:

Leadership articles are listed below. You may need to copy these addresses into your browser.

<http://learnthis.ca/2009/01/leadership-understanding-what-it-is/>

[http://learnthis.ca/2009/01/leadership-remember-its-about-people/?utm\\_source=BlogGlue\\_network&utm\\_medium=BlogGlue\\_Plugin](http://learnthis.ca/2009/01/leadership-remember-its-about-people/?utm_source=BlogGlue_network&utm_medium=BlogGlue_Plugin)

[http://learnthis.ca/2009/01/leadership-know-yourself-and-your-capabilities/?utm\\_source=BlogGlue\\_network&utm\\_medium=BlogGlue\\_Plugin](http://learnthis.ca/2009/01/leadership-know-yourself-and-your-capabilities/?utm_source=BlogGlue_network&utm_medium=BlogGlue_Plugin)

Innovation articles are listed below:

<http://www.youtube.com/watch?v=5Uh1KxcpWz0>

[http://www.youtube.com/user/asktheconsultant?feature=results\\_main](http://www.youtube.com/user/asktheconsultant?feature=results_main)

<http://www.youtube.com/watch?v=acbiFPs1nnk>

<http://www.youtube.com/watch?v=ufAe0oOxIHM>

### **PRE-ASSIGNMENT:**

Prepare a presentation to take place during the **first class meeting (Saturday May 11, 2013)**. The presentation should describe the specialization you have completed in your MA degree. You may include a description of all courses you have taken to date and an overview of how they have contributed to the development of your knowledge and skills. You may refer back to the material developed for MAPC 603 Graduate Interdisciplinary Study (if you took this course) as a starting point. Presentations are expected to be no longer than 15 minutes so please practice in advance. You may use Power Point or other graphics if you wish. A question and answer period will follow each presentation.

**FIRST CLASS MEETING: SATURDAY MAY 11, 2013 9:00 AM TO 5:00 PM**

**SECOND CLASS MEETING: SATURDAY JUNE 8, 2013 9:00 AM TO 5:00 PM**

### **COURSE ASSIGNMENTS AND ACTIVITIES:**

**All assignments are to be submitted in the online course Shell no later than Sunday at 12 midnight following the end of Weeks 2, 4, 6, and 8. Please submit them in the Assignment Drop Box.**

Please post a self-introduction on the discussion forum by Wednesday, May 8, 2013. Please post questions and/or respond to other students' introductions in a way that will help them feel welcome. In week 2 post a description of what you are writing in your first paper...an executive summary might be informative for other students.

**First Assignment:** Prepare a 10-page paper (APA format), not including title and reference page, that describes the specialization you have completed in your MA degree. You may include a description of all courses you have taken to date and an overview of how they have contributed to the development of your knowledge and skills in your field of study. You may refer back to the material you developed for MAPC 603 Graduate Interdisciplinary Study (if you took this course) as a starting point. Also, prepare a presentation of this paper to take place during the first class meeting (May 11, 2013) *Presentations are*

*expected to be no longer than 15 minutes so please practice in advance.* At the end of your paper and your presentation discuss how your knowledge and skills might be applied in disciplines (specializations) related to your own. You may use appropriate graphics to support your presentation. Please post a summary of your paper in the online discussion forum. **Please submit the written assignment in the online course “Assignment Drop Box” no later than the end of the day on Sunday, May 18. 23 points (23% of final grade)**

**Online discussion question for Week 2:** What led you to choose Regis University for your MA degree and how do you expect to use your degree when you finish?

The **second assignment** for this course will be a response to the following question: “As an expert in my field of study, how do I expect to apply Jesuit ideals and principles in my work and/or in other facets of my life?” This paper should be a minimum of 10 pages in length (APA format), not including title and reference pages, and should use the Traditions Booklet you received as an email attachment with the syllabus as a primary resource. Please include in your discussion how you see Jesuit ideals being applied in disciplines (specializations) related to your own. You may also use other resources as you find necessary and helpful. **Please submit your paper by the end of the day on Sunday, June 1, 2013, in the Assignment Drop Box. 23 points (23% of final grade).**

**Please read the instructions for the third assignment below. Note that you will need to select a question to write about and get approval from the instructor by the end of week 4.**

Please post in the discussion forum an executive summary of your paper or a draft of part or all of your response to the question at any time at any time during Week 3 and 4 before the paper is due.

**Online discussion for Week 3:** What are your thoughts about the phrase “How ought we to live?”

**Online discussion for Week 4:** What meaning does the phrase “Leaders in service of others” have for you?

For the **third assignment**, students will write a question and prepare a response to that question in a written paper of not less than 10 pages plus title and reference pages. The question and your response should integrate the concepts of **innovation and leadership** into how mastery of your specialization is to be achieved. **The question should be approved by the facilitator by the end of week 4.** The paper can take any format deemed appropriate by the student. You may be innovative and creative in deciding about the format of the paper. Include in your paper a discussion of how you see innovation and leadership being applied in specializations related to your own. **Please submit your paper in the Assignment Drop Box by the end of the day on Sunday, June 15, 2013. 23 points (23% of final grade).**

Please post in the discussion forum an executive summary and/or a draft of part or all of your question and response at any time during weeks 5 and 6 before the paper is due. Be prepared to discuss your paper at the second week-end class meeting.

**Online discussion for Week 5:** Give one example of a competent leader in your field of study or work. What are the characteristics, traits and or actions of this person that makes him or her a true leader?

**Online discussion for Week 6:** Give one example of an innovative practice in your field of study or work. Why is this practice considered innovative and how do you think it will advance knowledge and/or practice for the future?

The **final assignment** is based on a simulation exercise. Assume that you are a professional in your field of study. You have been asked to prepare and present a paper at a professional conference in your discipline. In most professional conferences presentations are made to a group of people attending the conference and who are interested in learning more about the topic of the presentation.

Prepare a paper (APA format) that is a minimum of 10 pages not including a title and reference page that could be presented at such a conference. You may select a topic or issue about which you have specialized knowledge in your field of study. The paper should demonstrate your ability to analyze and synthesize information (describe how you make sense of complex information), to think critically (describe what is important and why) and to apply your knowledge to the challenges of the future (describe how you would apply your knowledge in your work or in your life). This should be an example of your very best work. Be creative with this assignment and have some fun! Post a summary of your paper in the discussion forum at any time during weeks 7 or 8 requesting feedback from other students. **Please submit the final copy of your paper in the Assignment Drop Box by the end of the day on Sunday, June 29, 2013. 23 points (23% of final grade)** The facilitator will provide final feedback and your course grade later that week. Final Course grades will be submitted on the Thursday.

#### **Presentation Requirement (Included in participation grade)**

Students are asked to make a presentation of their final assignment at or near the end of the 8<sup>th</sup> week of the term. While arrangements for presentations will be discussed in the final classroom meeting, students should plan early to schedule their presentation. A single day or evening convenient for students will be scheduled for these presentations. I will likely invite your faculty advisor to these sessions so we will schedule them as early as possible. The presentations should be approximately 15 minutes in length followed by a short question/answer period. PowerPoint or other graphics are encouraged.

#### **Participation Requirement 8 points (8% of final grade)**

Students are expected to participate in the discussion forum each of the eight weeks and to attend and participate in classroom sessions as scheduled. Participation includes online discussion posts related to each of the four assignments (see assignment description) as well as your initial introduction and your responses to each of the weekly discussion questions. You will also be posting your reaction to the posts of other students. A minimum of four posts per week are required.

**Online discussion for Week 7:** What do you see as the greatest challenges to be faced in the future in your field of study or work and why do you think they are the most significant?

**Online discussion for Week 8:** What would you like others in your field of study or work to know about what you have learned in your MA degree at Regis?

Hawaii International Conference on Education

January 5 - 8, 2014

**Title of Submission:** FORMAL GOAL SETTING AND PERSISTENCE

**Submission ID Number:** 749

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FORMAL GOAL SETTING AND PERSISTENCE

By

Dr. Robert Collins, Dr. Dorothy Williams and Dr. Jill Coddington

College for Professional Studies

REGIS UNIVERSITY

September, 2013

## **Abstract**

This research project was designed to investigate the impact of formal goal setting activities of adult non-traditional graduate students on their persistence to complete a master's degree. The researchers hypothesized that students in programs that incorporated goal setting and monitoring procedures would graduate at higher rates than students in comparable programs that did not incorporate goal setting and monitoring. Data were acquired from Regis University records describing students in eight graduate programs offered in the College for Professional Studies. The data were analyzed using selected statistical methods to test the significance of findings. The preliminary findings reported in a manuscript presented at the 2013 Hawaii International Conference on Education and published in the conference proceedings did not support the hypothesis. The researchers subsequently determined that the data used in the initial study did not appropriately represent the programs given a relatively short timeline used for the study. Therefore, additional longitudinal data were added to the original data and further analysis was conducted in this follow-up study. The secondary analysis of data from the longer timeline did not support the original hypothesis. While graduation rates for all four degrees increased, the degree program that incorporated formal goal setting still did not graduate students at a higher rate than two other degree programs. Thus, based on these results the authors concluded that formal goal setting may not play an important role in increasing graduation rates.

## **Background**

Setting and accomplishing goals has long been considered by most educators a means for reaching desired outcomes and developing successful programs. The authors of this manuscript describe a study of four graduate degree programs at Regis University in Denver, Colorado, USA that was designed to look for a connection between formal goal setting and successful completion of degrees. A preliminary study was conducted in 2012 and a manuscript describing that study was presented at the Hawaii International Conference on Education (HICE) in January 2013. This manuscript describes a follow-up study conducted in 2013 examining additional longitudinal data. Four master's degree program offered by Regis University were the focus of the study. The Master of Arts (MA) was developed in 2005 by the Regis University College for Professional Studies (CPS). The program was designed to provide an individualized graduate learning program for students based on their learning and professional goals. The program is interdisciplinary by nature as almost all of its students choose to study across more than one academic discipline. Almost all MA students enter the program with professional goals in mind. An integral part of the program is a formal goal setting process. Students work with their faculty advisor to develop and document formal goals for their program. The goals form the foundation of the students program of study as courses with appropriate learning outcomes are selected and/or designed to address the student's formal goals. The program allows students to monitor and adjust their learning goals and their degree program as they complete courses. In addition, students are required to include an interdisciplinary core course to be completed at the mid-point of the degree plan. This course includes a review of formal learning goals and the students' progress toward achievement of those goals. Thus, the MA program contains a formal goal setting and monitoring process that most other graduate degrees do not offer students. The formal goal setting design of the MA program was necessary to provide a clear focus for students who need a unique, individualized

graduate learning program. Because the MA program design is unique and because it has a strong focus on formal goal setting the authors believe that students will therefore be more motivated and will complete their degrees at higher rates than other comparable graduate degrees offered at Regis University.

Notwithstanding the design of graduate programs intended for adult learners, a growing concern for CPS and other institutions offering graduate programs for adult learners is the persistence of students to complete their degree and the reasons they do or do not complete their degrees. Not only is there a concern about whether such programs are achieving expected outcomes, but there is also a concern about the efficiency of adding new students at a higher rate to offset the loss of students dropping out.

### **Central Research Question**

This project is designed to examine the relationship between formal goal setting requirements in a MA degree program and persistence of graduate students to complete their graduate degree. More specifically, we seek to determine if formal goal setting improves the likelihood that students will complete their degree. In this study persistence of students enrolled in a MA degree program that requires formal goal setting was compared to students enrolled in other comparable degree programs.

### **Related Literature**

Since this paper is a follow-up to a research manuscript written in 2012, presented at HICE in January 2013, and published in the proceedings of that conference, the review of related literature included in the first manuscript is presented here as a convenience for the reader.

Literature in this field indicates that other researchers are strongly interested in goal setting (Dweck, 1986; Grant and Dweck, 2003; Eppler and Harju; 1997; Klein and Lee; 2006). However, much of

the literature applies to students in elementary/secondary schools and traditional age college students, while little is yet available relating to adult nontraditional learners. More research that applies directly to programs that offer accelerated, intensive and online learning formats is clearly needed.

Bandura (1986) proposed a social cognitive theory that established the foundation of continued study of self-efficacy and motivation. Bandura's research provides a useful theoretical framework for the analysis of the relationship between goal setting and self-efficacy. Schunk (1990) examined goal setting and self-efficacy using Bandura's theory. This research supported the notion that goal setting and self-efficacy are important self-regulated learning processes. Dweck (1986) and Schunk (1990) examined goal orientations and academic performance. They found support for the notion that people "...who believe they are capable select tasks at which they can succeed, persist longer, and expend effort..." (Schunk, 1990, p 82).

Other researchers (Fleming ,2002; Glynn, Aultman, and Owens, 2005; and Ironsmith, et.al. 2003) also examined motivation and academic performance. Results of these studies support a positive relationship between motivation, goal setting and academic performance.

Yet other researchers (Taniguchi and Kaufman 2005; and Metzner, Lauer and Rajeciki 2003) focused their research on factors related to persistence. Metzner, Lauer and Rajeciki (2003) found moderate support for factors that implied a dimension of commitment to future goals. Taniguchi and Kaufman (2005) found that part-time enrollment deters college completion while high cognitive ability and a high status occupational background seem to increase the chance of completion. McGivney (2004) summarized recent data in an effort to understand persistence patterns of adult learners. She reported eight factors that contribute to persistence of adult learners, the first of which was motivation. While adult learners were generally acknowledged as being more motivated than their younger traditional student counterparts, more specific reasons for motivation level of adults were reported to include: a strong desire to pursue an educational program, a desire to prove themselves capable of

learning, obtaining a qualification or to study for other employment reasons While the specific practice of setting goals was not mentioned, logic dictates that these reasons are a likely foundation for goals that adult learners may establish as they enter and pursue continued education.

In a qualitative study, Cox (2008) interviewed 15 adult students who were graduates of the University of Memphis Master of Arts in Liberal Studies degree, the purpose of which was to describe factors that contributed to persistence toward completion of their degree. Five findings were reported including (1) motivation to get a better job, (2) desire for efficacy, (3) family support and support from others, (4) student/teacher relationships and (5) Faith and religion. Cox concluded that the factors described in his study were consistent with his own experience and were also consistent with the work of Houle (1988) who described goal oriented learners, activity oriented learners and learning oriented learners in his book *The Inquiring Mind*.

A practical application of using goals to motivate learners is described by Meyer (2006) in his book titled *Attitude is everything*. Meyer has long been accepted by many in the field of motivating adults to succeed as the founder of S.M.A.R.T. Goal setting, which he describes in detail in his book. Each letter in the title represents a descriptor for defining effective goals. Thus he posits that effective goals should be specific (S), measurable (M), attainable (A), realistic (R), and tangible (T). While other motivational presenters, including the late Stephen Covey, have adopted or adapted this concept into their programs, there is little scholarly research evidence that confirms their effectiveness. However, many adult learners have been exposed to motivational programs either because they were drawn to them for personal reasons or because of on the job training and development programs. While practical application of goal setting process is beyond the scope of this study it is in need of further scholarly investigation. While this review was not exhaustive, literature related to the focus of this study were

examined. Much of the research reviewed here, however, was conducted using participants other than those on which the current study was focused: non-traditional adult graduate students.

### **Method**

The method for this project was to compare the persistence of students enrolled in the Regis University MA degree to students enrolled in other comparable Regis graduate degree programs. The purpose of the project is to determine if formal goal setting and monitoring features required in the MA program impact on the persistence of students to complete the degree. The researchers hypothesized that since students in the MA program set formal goals as part of their degree planning requirements and further that they had formal review of goal status later in their program, they would graduate at higher rates than students in other comparable degree programs that did not incorporate goal setting and monitoring activities.

Existing student data were collected for students in the MA degree and for students in eight comparable Masters degree programs. Data were compared to determine whether graduation rates for programs that do not incorporate formal goal setting and monitoring activities are different from those of the MA degree that does include formal goal setting and monitoring activities. Quantitative analytical methods including appropriate statistical tools were used to analyze the group data. For purposes of this project persistence is defined as completion of the degree as originally intended by the learner. In an attempt to hold certain variables constant, comparable programs were defined as having equal in total credit hour requirements, including a specialization and including core course requirements. The primary variable to be examined in this project was whether or not degree programs incorporate formal goal setting and monitoring activities. Other variables also included in this study that may be related to persistence are: total credits required, number of credits transferred from other institutions, grade point average (GPA), active duty military service, and gender. Therefore, it was the

researchers' intent to gather data relative to each of these variables as well as for the primary variable. Individual students were not identified in the data collection process. While persistence is defined as degree completion, the researchers acknowledge that CPS students are adults who have competing priorities, one of which is their education. Therefore they will, from time to time, step out of classes for a term or two, then return to complete their degree. A pattern often recommended to students is to remain enrolled one course per 8 week term, or two courses per semester. Doing so would allow students to graduate in six semesters or two academic years. However, the researchers estimate that a maximum of three years or nine semesters is the norm for CPS students who are reasonably persistent to graduate.

The target population of this study consisted of degree seeking graduate students from the following CPS programs: Master of Arts (MA), Master of Nonprofit Management (MNM), Master of Science in Accounting (MSA), Master of Science in Database Management, Master of Science in Information Assurance, Master of Science in Information Technology Management, Master of Science in Software Engineering, and Master of Science in Systems Engineering (MSCS).

Data were collected from records of students who began their programs from September, 2007 through August 20013. A total of 1,767 student records including all four programs were examined. The beginning date was chosen to coincide with the origin of CPS that formed the four current schools. The latest data available at the end of the Regis Summer semester was chosen as the end date to ensure that all students enrolled in these programs were considered in this study. The data acquired included: (1) term of first course, (2) term of last course, (3) number of credits completed by August, 2013, (4) term of graduation, (5) GPA, (6) gender.

When the data were collected and analyzed, the number of records in the five technology degrees did not warrant a statistical analysis of each of those degrees independently. The researchers

therefore grouped all of these degrees together as one unit of analysis. This unit was named the Master of Science in Computer Science (MSCS) and were referenced in this way in the data analysis and findings sections below. Thus, there were four data sets to be included in the analysis of data. One for each of the following: MA (Master of Arts), MNM (Master of Nonprofit Management), MSA (Master of Science in Accounting) and MSCS (Master of Science in Computer Science).

### Data Analysis

A statistical analysis of the data was conducted including calculations of mean, standard deviation and P-value tests between each of the four data sets. The data collected included a number of other fields such as gender and veteran status that may improve granularity, however, there were not sufficient numbers in each sub-category to support generalizations. Thus, the four populations as a whole were analyzed.

The first calculations made were the graduation percentages and standard deviations for each of the four degree categories. These are presented in table 1 below.

Table 1 -Graduation rates

	MSA	MNM	MSCS	MA
Graduation %	62.82974	60.89965	36.45991	50.5
Standard deviation	.49735	.49351	.5145	.49325

Further analysis was conducted to determine if there were significant differences when comparing the percentage of graduation for each of the degree programs. P-values were calculated and are presented in table 2 below.

Table 2 – P-value Comparisons\*

Degree 1	Degree 2	P-value
MSA	MNM	<b>.02579</b>
MSA	MA	<b>.01215</b>
MSA	MSCS	<b>7.3215 * 10<sup>-3</sup></b>
MNM	MA	<b>.01046</b>
MNM	MSCS	<b>51212*10<sup>-5</sup></b>
MA	MSCS	<b>4.325*10<sup>-2</sup></b>

\* **BOLD** indicates statistical significance

The MNM program not only had the highest overall graduation rate (62.8%), but was significantly better than the graduation rate for the MA (50.5%) and the MSCS (36.5%) program, the MSA program graduation rate (60.9%) was significantly better than the graduation rate for MA and the MSCS program, and the MA program graduation rate was significantly better than the graduation rate for MSCS. Note that the hypothesis of this study was that the MA program that included goal setting and monitoring would have graduation rates significantly better than the other degree programs.

### Findings

The purpose of this research was designed to examine the relationship between formal goal setting requirements in a graduate degree program and persistence of graduate students to complete their degree as compared to other degree programs at this university that do not require a formal goal setting plan.

This research was quantitative in nature for several reasons. First, quantitative studies can be reproduced in order to do future comparative analyses based on facts. Secondly, they can statistically support the hypothesis. Thirdly, if the hypothesis is supported, it can be used to generalize about the target population.

The subjects in this study were all degree seeking graduate students from the following programs: Master of Arts (MA), Master of Nonprofit Management (MNM), Master of Science in

Accounting (MSA), and Master of Science in Computer Science (MSCS). Data were accessed from those students who started their programs from September 2007 through April 2009. As previously discussed, the beginning date was chosen to coincide with the origin of CPS (College for Professional Studies) that formed the four current schools.

This research set out to address the hypothesis that students who had a formal goal setting plan would graduate at a higher rate than those who did not have a formal goal setting plan. The outcome would be success or failure to graduate.

Our initial findings did not support the hypothesis that a formal goal setting plan results in a higher graduation rate. The MA students did graduate at a higher rate (50.5%) than those in the MSCS program (36.5%), but did not graduate at a higher rate than the MNM (62.8%) or MSA students (60.9%). The same holds true for analyzing the overall graduation rates NOT including current students across the four programs. The MA students did graduate at a higher rate (58.6%) than those in the MSCS program (44%), but did not graduate at a higher rate than the MNM (70.6%) or MSA students (69.3%). What is notable is that the MNM students graduated more students than all other programs in both categories (overall graduation rate and graduation rate not including current students).

The average number of years to graduate from the shortest amount of time to the longest amount of time is as follows: The students in the MSA program took an average of 2.32 years to complete the program followed by the students in the MNM taking an average of 2.78 years. The MA students took an average of 2.92 years to graduate while the students in the MSCS program took an average of 3.31 years to graduate. Whereas the MNM students had a higher overall graduation rate as well as a higher graduation rate not including current students, the MSA students graduated in a shorter amount of time on average. This would indicate that the university might need to reevaluate the

effectiveness of a formal goal setting and/or revise the goal setting procedures in the MA degree program.

**All degree programs**

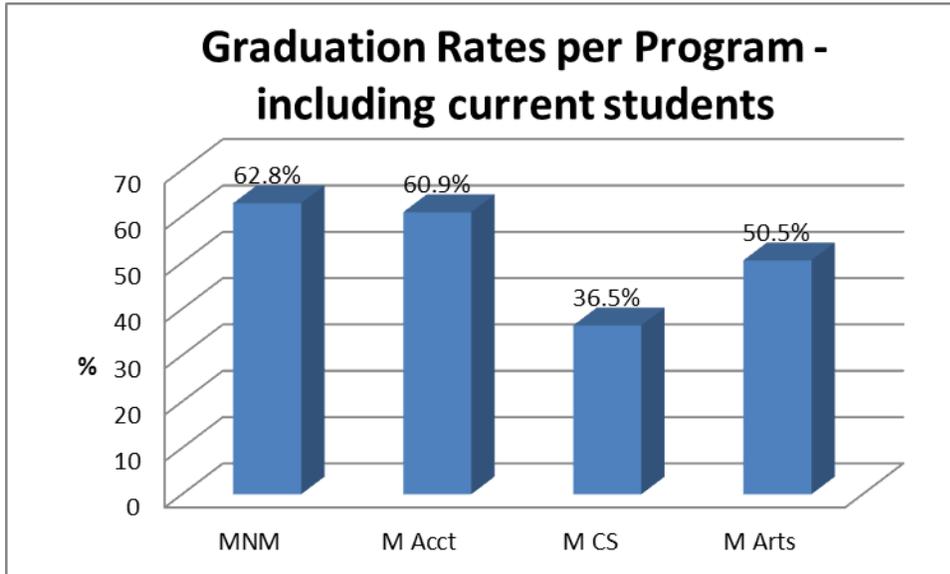


Figure 1: Graduation Rates

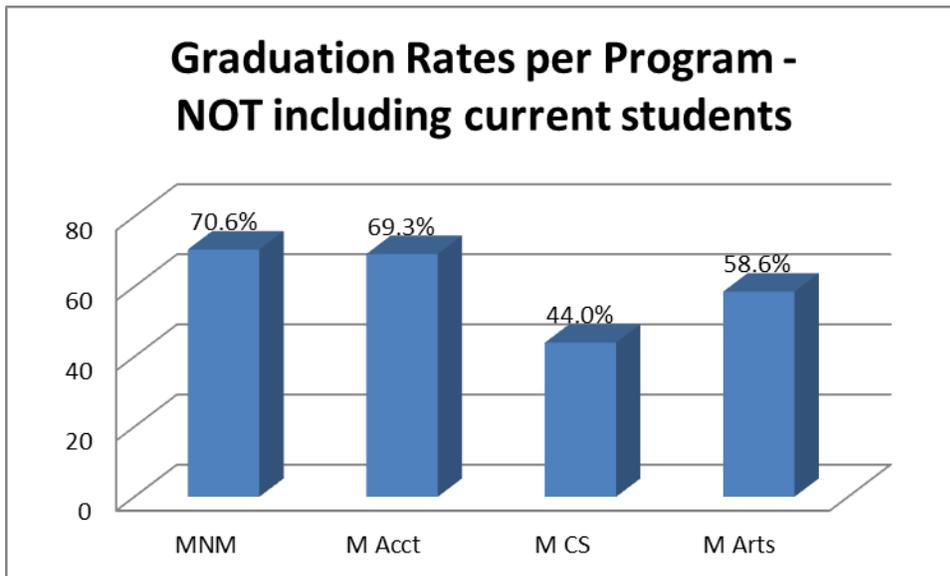


Figure 2: Graduation Rates Not Including Current Students

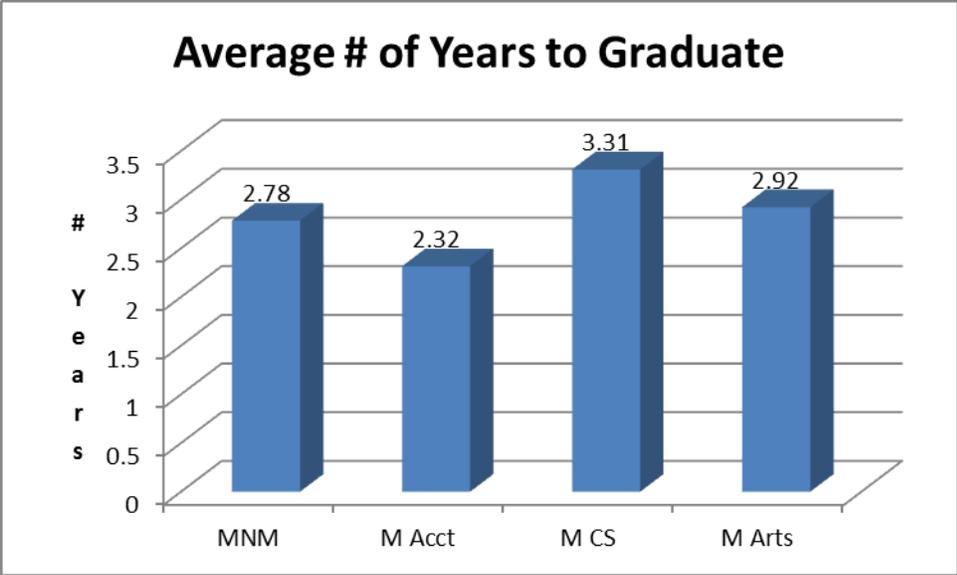


Figure 3: Years to graduate

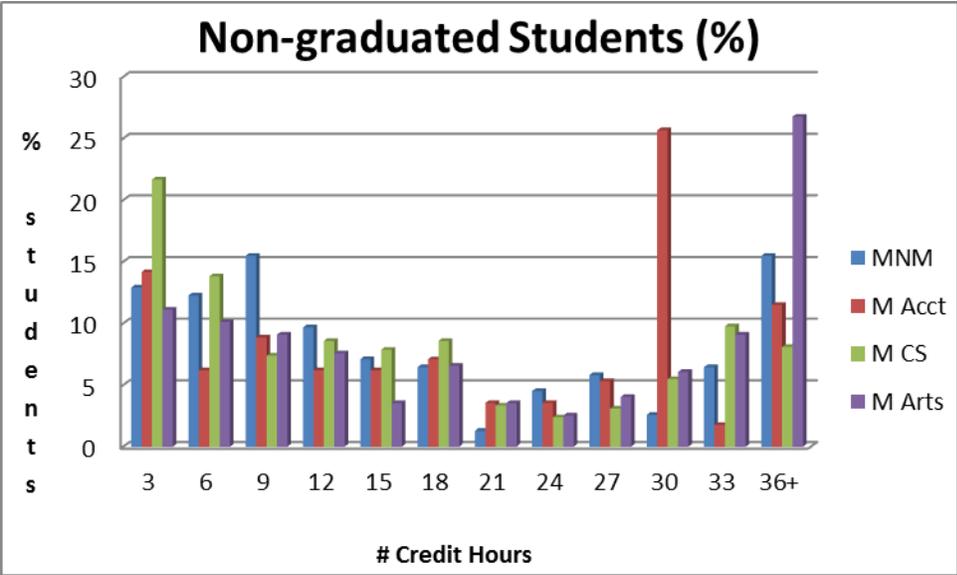


Figure 4: Percent Non-Graduated Students

## Master of Science in Accounting

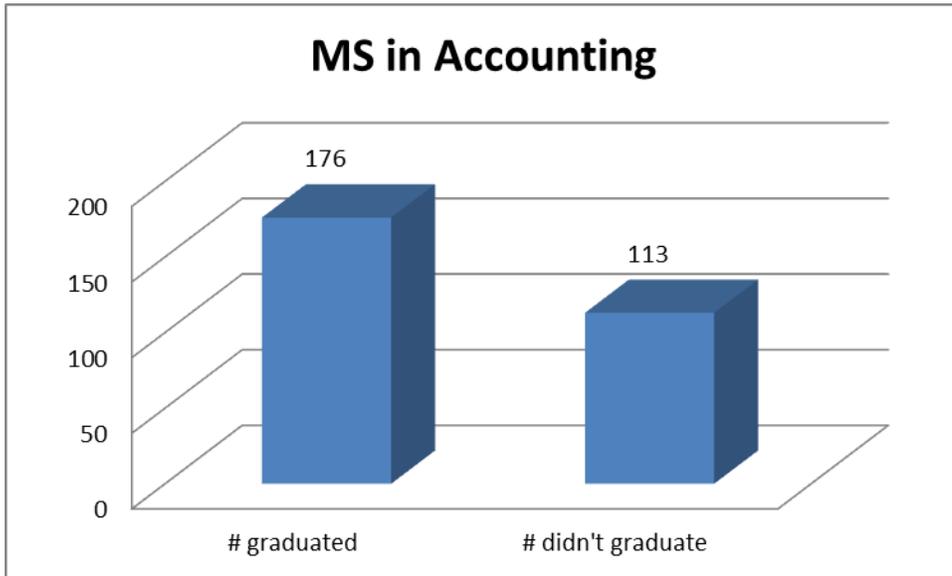


Figure 5: Number Graduated and Not Graduated

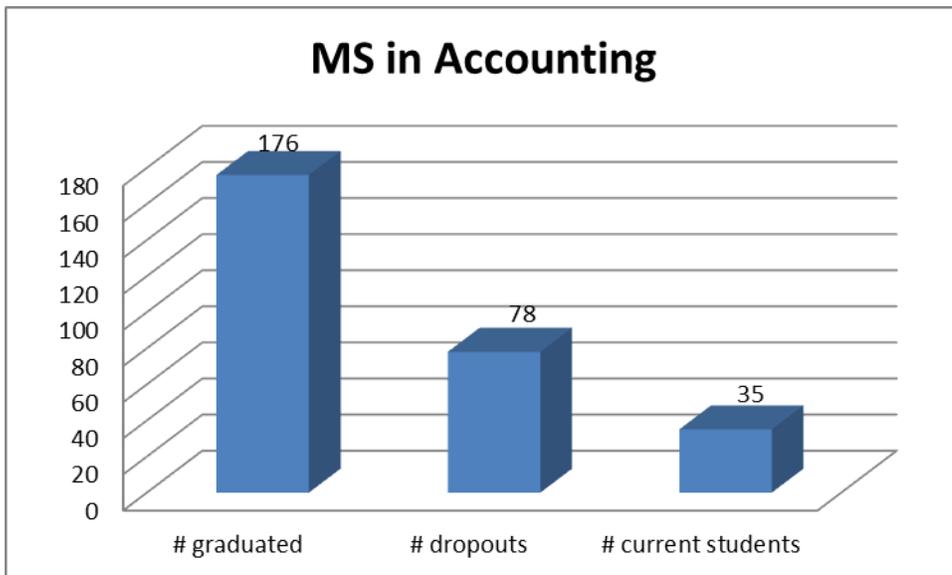


Figure 6: Number graduated, number dropouts, number of current students

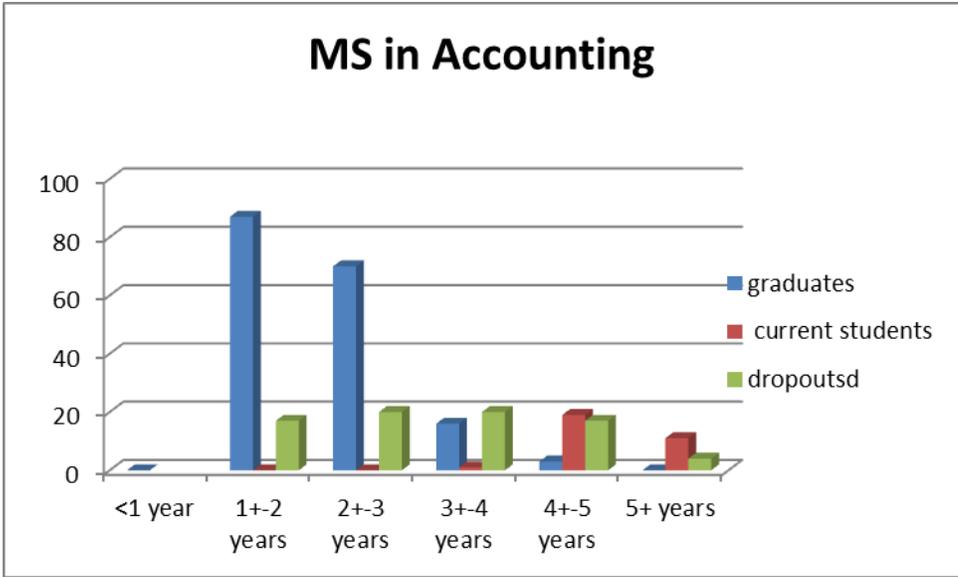


Figure 7: Years in Program

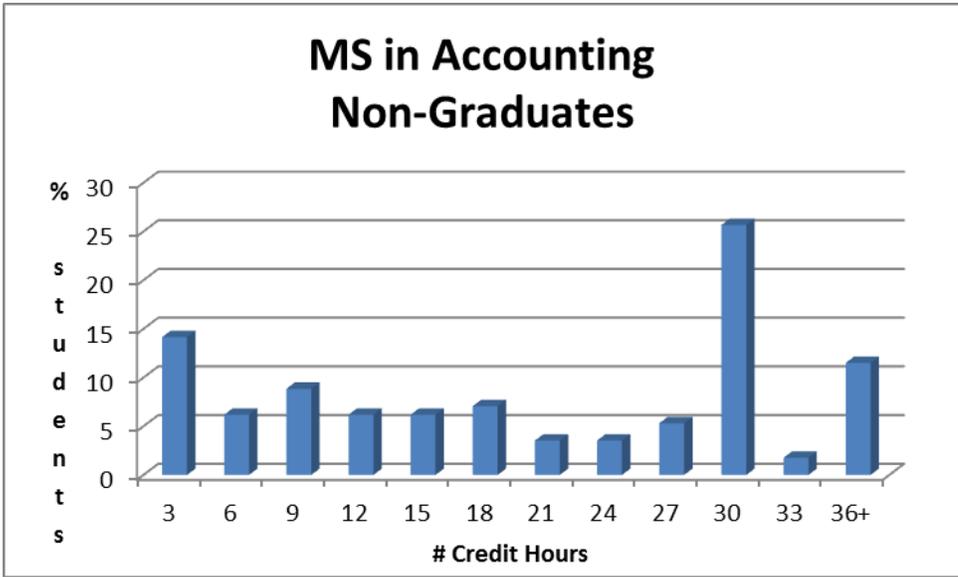


Figure 8: Percent of Students Versus Number of Credits for Non-Graduates

Figure 5 displays of the 289 students in the Master of Science Accounting (MSA) program, 176 students graduated and 113 students did not graduate. Figure 6 displays not only the 176 students who graduated, but of the 113 who did not graduate, 78 dropped out of the program (these students were

not enrolled in a class since January, 2013) and 35 students are currently enrolled in the program. Of those who did not graduate, there is a significant difference between the drop-out rate and those currently in the program with more students who dropped out. Figure 7 displays the time in the program. More students graduated in the first three years of the MSA program taking an average of 2.32 years. The drop-out rate remained consistent over the first 4 ½ years, but dropped off in year 5. There were more current students taking longer in the program. Figure 8 displays the non-graduated students and the amount of credit hours completed. Over 35% of the students have completed 30 or more credit hours.

**Master of Arts**

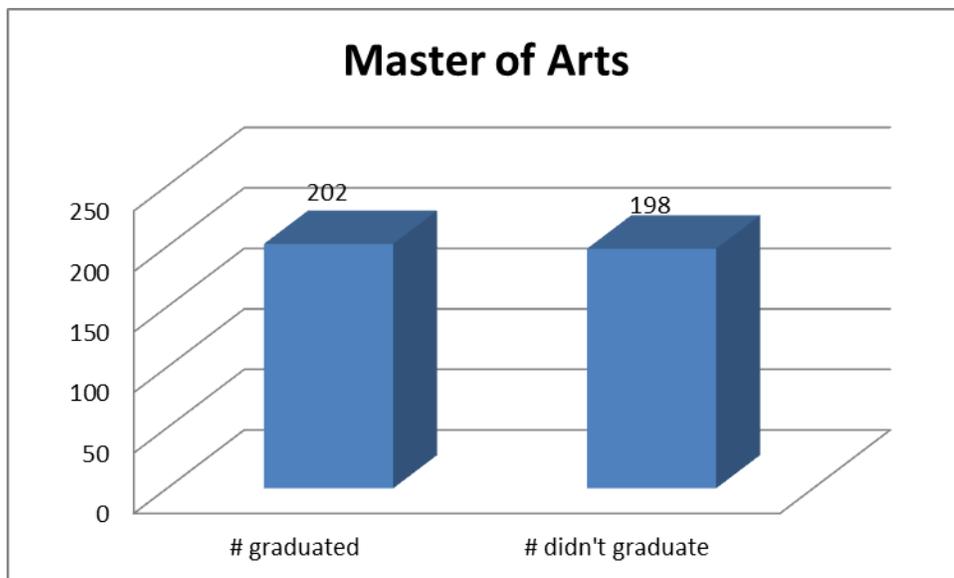


Figure 9: Number Graduated and Not Graduated

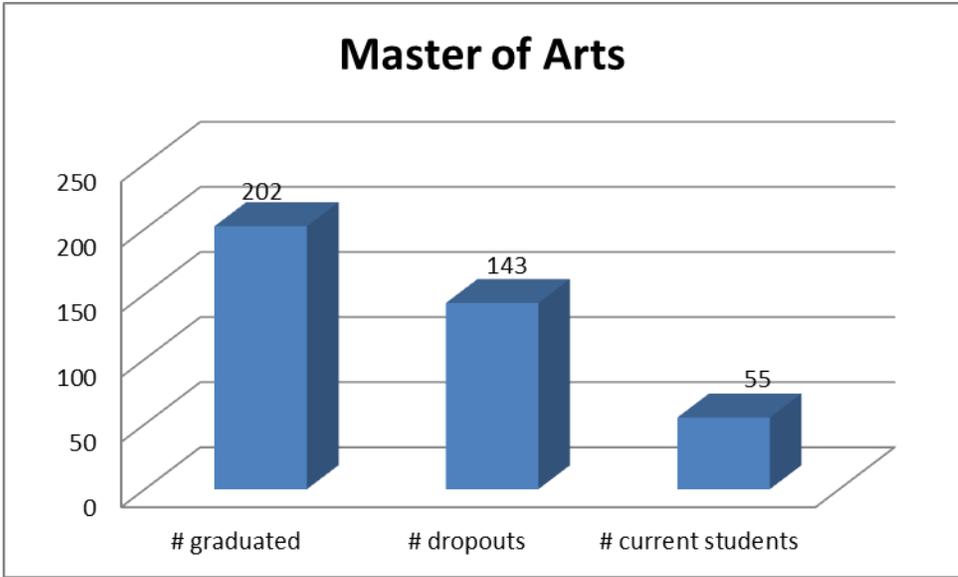


Figure 10: Number Graduated, Number of Dropouts and Number Current Students

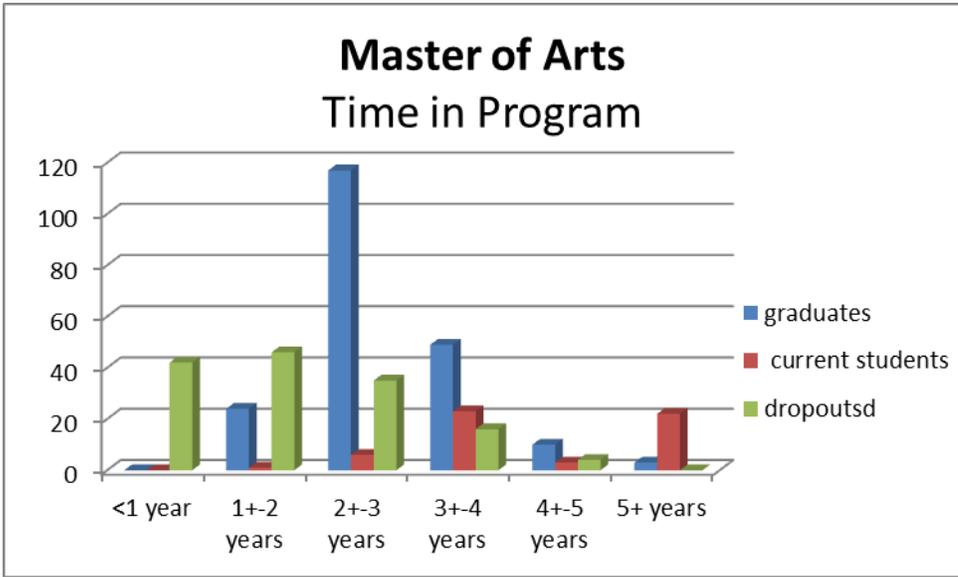


Figure 11: Years in Program

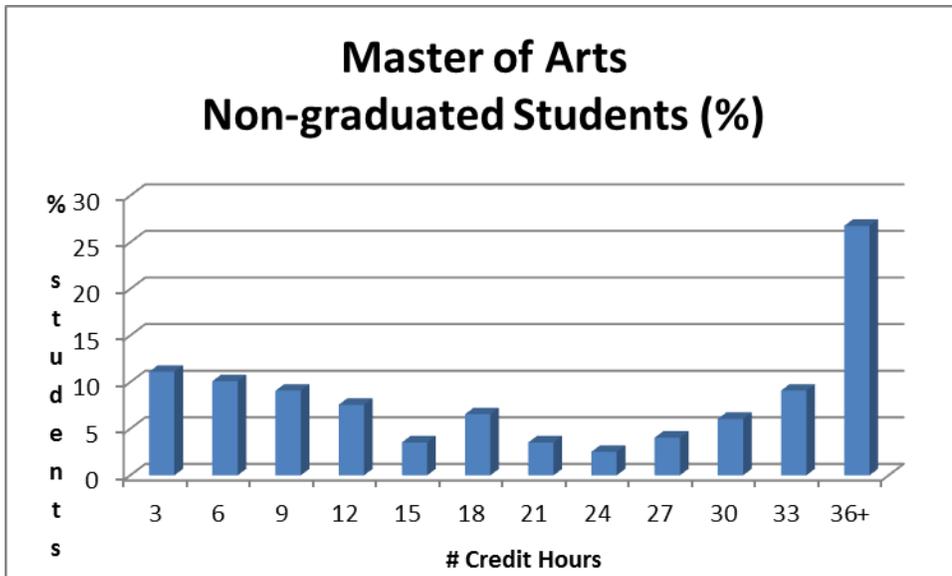


Figure 12: Percent of Students Versus Number of Credits for Non-Graduates

Figure 9 displays of the 400 students in the Master of Arts (MA) program, 202 students graduated and 198 students did not graduate. Figure 10 displays not only the 202 students who graduated, but of the 198 who did not graduate, and 143 dropped out of the program (these students have not been enrolled in a class since January, 2013) and 55 students are currently enrolled in the program. Of those who did not graduate, there is a significant difference between the drop-out rate and those currently in the program with more students who dropped out. Figure 11 displays the time in the program. More students graduated in the first three years of the MA program taking an average of 2.92 years. The drop-out rate remained consistent over the first 4 years, but dropped off in year 5. There are more current students taking longer in the program. Figure 12 displays the non-graduated students and the amount of credit hours completed. Over 39% of the students have completed 30 or more credit hours.

**Master of Science Computer Science (MSCS)**

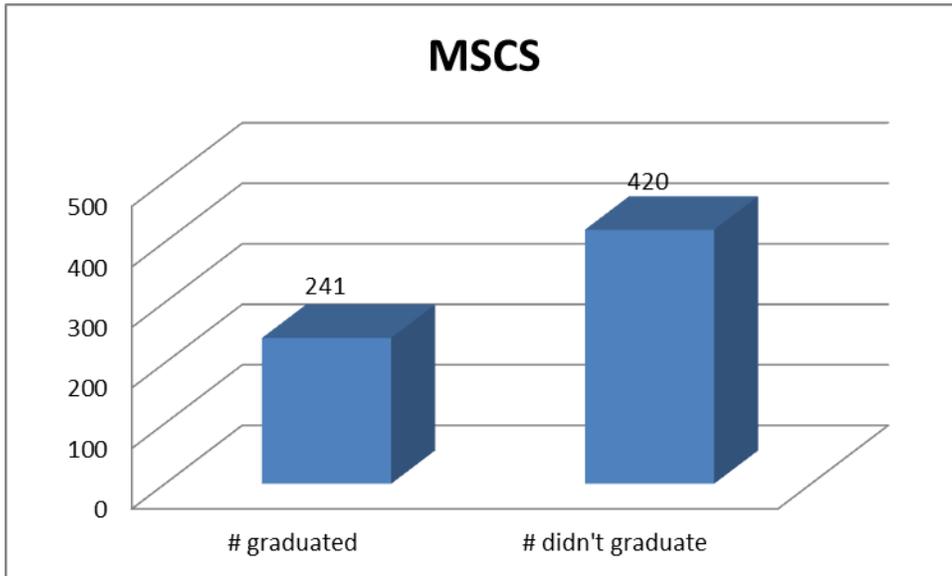


Figure 13: Number Graduated and Not Graduated

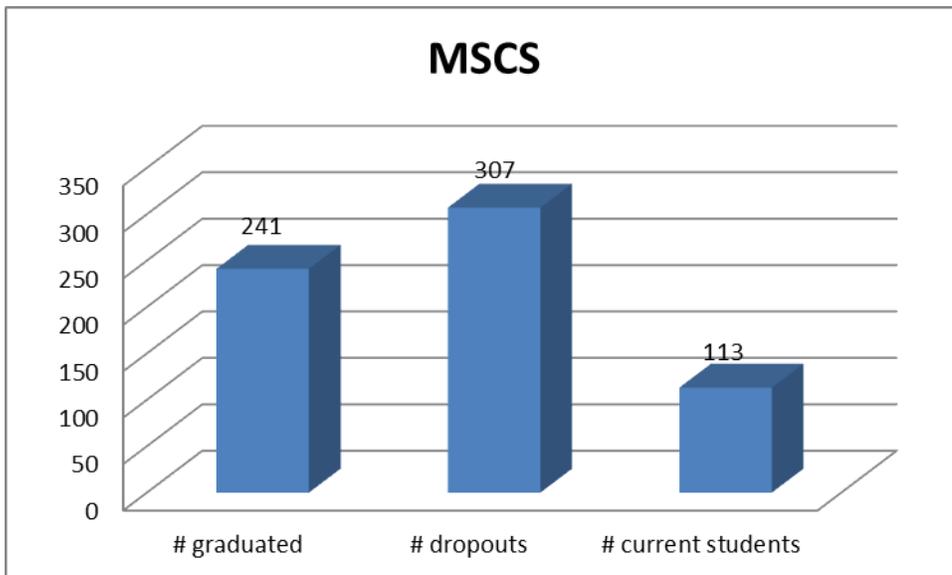


Figure 14: Number graduated, number dropouts and number current students

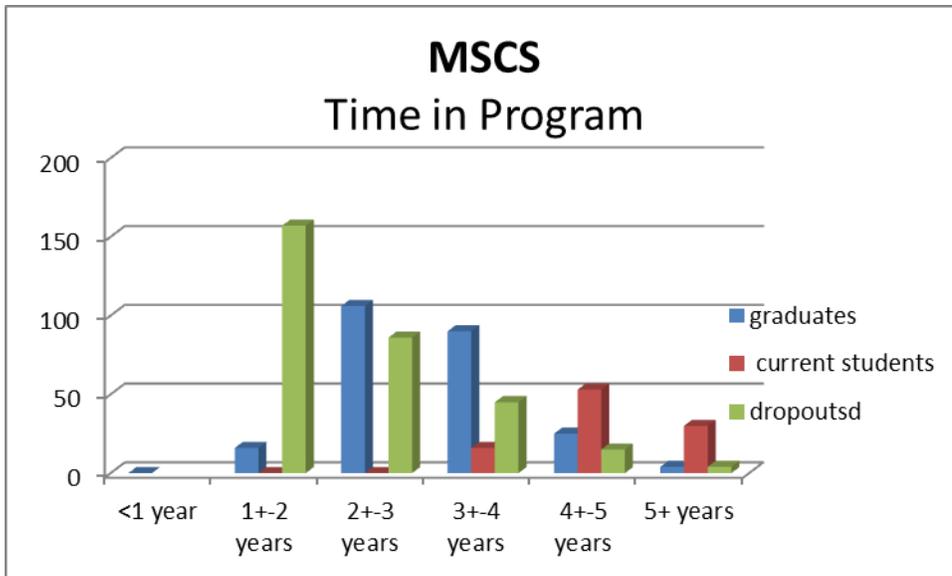


Figure 15: Years in Program

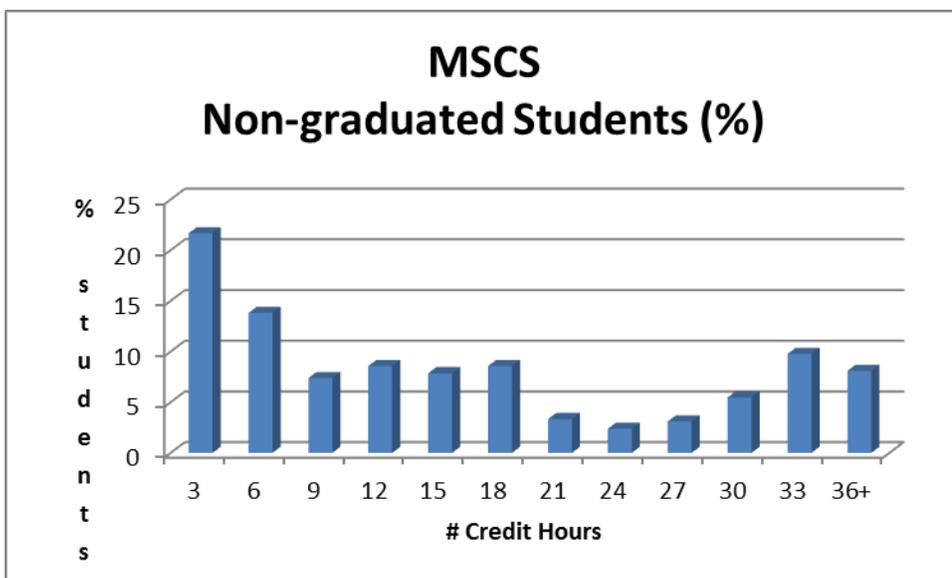


Figure 16: Percent of Students Versus of Number of Credits for Non-Graduates

Figure 13 displays the 661 students in the Master of Science Computer Science (MSCS) program indicating that 241 students graduated and 420 students did not graduate. Figure 14 displays not only the 241 students who graduated, but that of the 420 who did not graduate, 307 dropped out of the

program (these students have not been enrolled in a class since January, 2013) and 113 students are currently enrolled in the program. Of those who did not graduate, there is a significant difference (three times) between the drop-out rate and those currently in the program with more students who dropped out. Figure 15 displays the time in the program. More students graduated between 2 ½ and 4 years in the MSCS program taking an average of 3.31 years. The drop-out rate was higher during 1 ½ to 3 years of the program while those currently enrolled in the program were still active through year 5. There are more current students taking longer in the program. Figure 16 displays the non-graduated students and the amount of credit hours completed. Over 22% of the students completed 30 or more credit hours.

**Master of Nonprofit Management (MNM)**

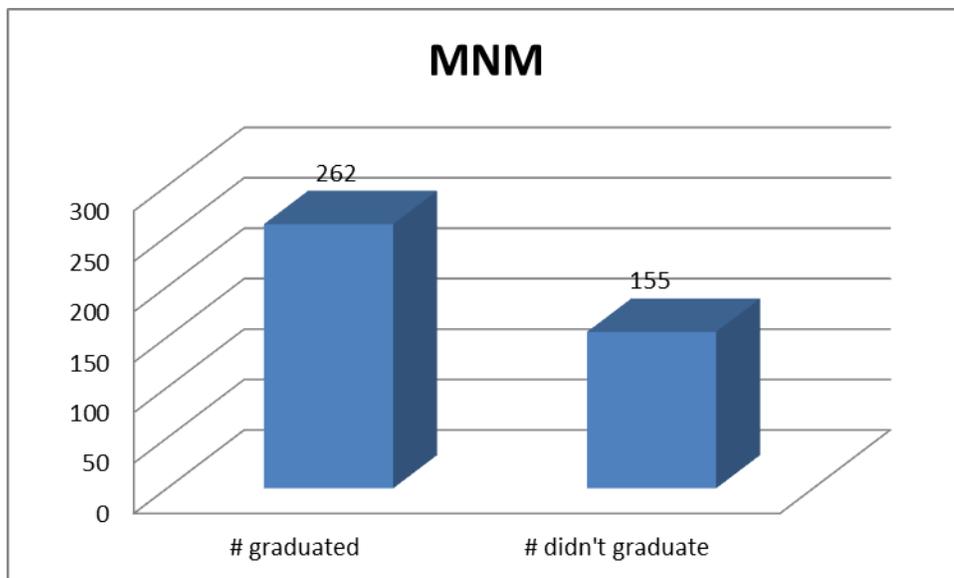


Figure 17: Number Graduated and Number Not Graduated

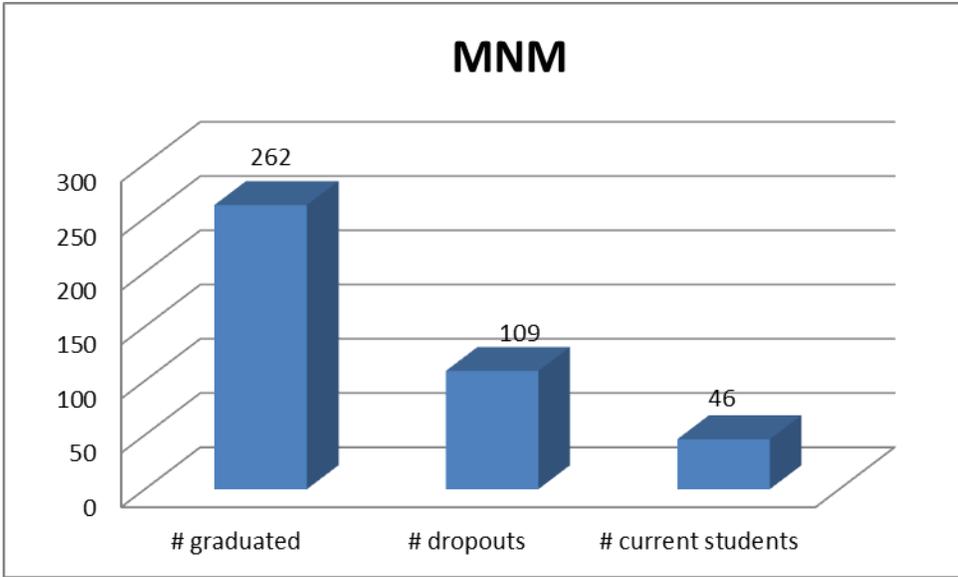


Figure 18: Number Graduated, Number Dropouts and Number Current Students

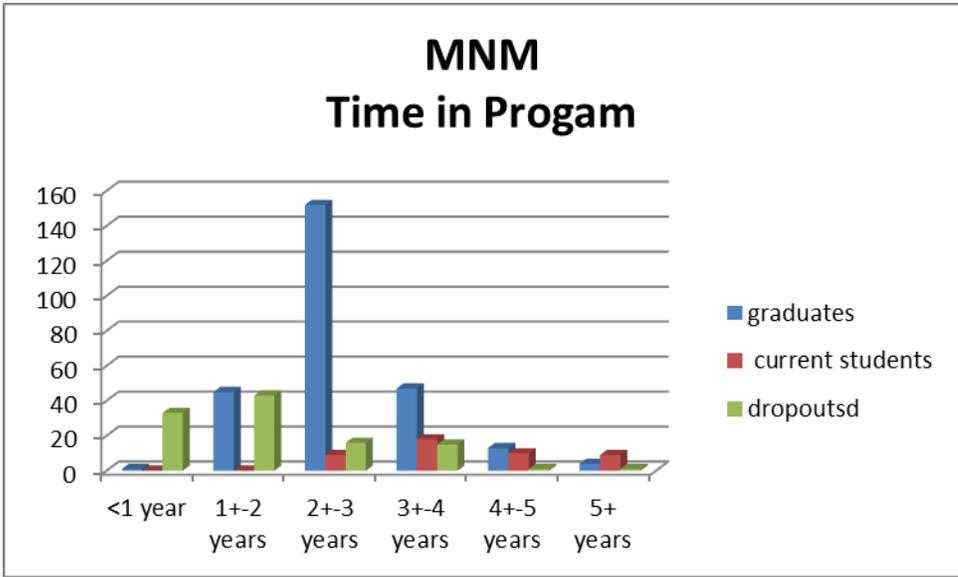


Figure 19: Years in Program

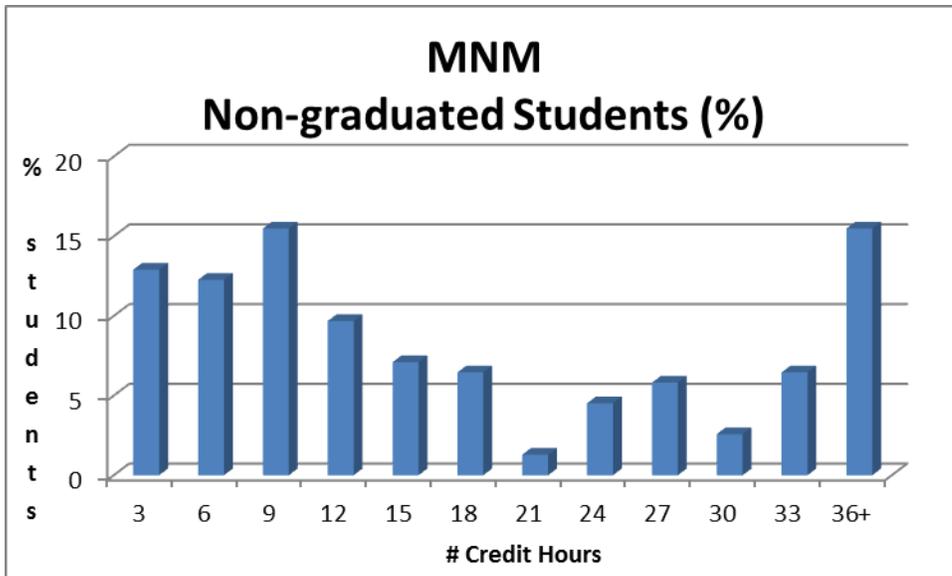


Figure 20 : Percent of Students Versus of Number of Credits for Non-Graduates

Figure 17 displays of the 417 students in the Master of Nonprofit Management (MNM) program, 262 students graduated and 155 students did not graduate. Figure 18 displays not only the 262 students who graduated, but of the 155 who did not graduate, 109 dropped out of the program (these students have not been enrolled in a class since January, 2013) and 46 students were currently enrolled in the program. Of those who did not graduate, there is a significant difference between the drop-out rate and those currently in the program with more students who have dropped out (25%). Figure 19 displays the time in the program. More students graduated between 2 ½ and 3 years in the MSM program taking an average of 2.78 years. The drop-out rate remained consistent between 2 ½ to 4 years, but dropped off after 4 ½ years. There are more current students taking longer in the program. Figure 20 displays the non-graduated students and the amount of credit hours completed. Over 24% of the students have completed 30 or more credit hours.

## **General Observations**

The number of current students in all of the programs that have been in the program for longer than the average seems excessive. These students may need to be contacted to determine why they have their path to their degree is longer than average and what is still needed to complete their degree.

The number of current students in all four degree programs with more than 30 credit hours and have not yet graduated seems excessive. These students may need to be contacted to determine why they have not completed their degree and whether they intend to do so. While this issue is more prevalent in some programs than others, all should be contacted.

The number of dropout students with 30 or more credit hours in the program seems excessive. The programs are different than the ones in this same situation who are current students. These students may need to be contacted to determine why they have dropped out and more specifically whether the completion of a thesis or capstone prevented the completion of their degree.

There is a distinct point in each program, all in the second or third year when the number of graduates is high followed by the number of dropouts being high. Intervention at this point in the program may be necessary to increase retention and graduation rates. The most likely contact time would be slightly before the dropout rates spike. This point is unique to each program so the intervention should be timed accordingly.

## **Discussion**

This research project began with a purpose of investigating the impact of formal goal setting and monitoring activities of adult non traditional graduate students on their persistence to complete their degree. The data analysis and findings indicate that the hypothesis that goal setting would increase degree completion was not supported.

The researchers believe that other variables that were not anticipated or controlled in this research likely had an effect on the findings. Initially, the limit of three years of data collected in this study was not considered to have been long enough to accurately describe the degree completion of students in any of the four data sets that were analyzed in this study. Therefore, additional data were collected and analyzed in the current study. Data were collected from Fall, 2007 through Summer, 2013, a total of six academic years. Since the analysis that included significant additional data did not change the outcome of the study the researchers now believe that other unidentified intervening variables may have significant impact on students' completion of degrees.

The researchers also acknowledge that there are several limitations of this study, the first of which is that the target population for this study was from one university and may or may not represent all adult graduate students in non-traditional master's degree programs. Other limitations include the possibility that other unidentified and controlled variables may have a more significant impact on persistence to graduate than the single variable that was tested in this study. Therefore, the researchers believe that continued research is necessary, to identify and test other relevant variables.

The results of this study are significant for colleges and universities throughout the country that have accelerated graduate degree programs for adult students, specifically, for those adult students who have gone back to school to help them achieve either professional or personal learning goals.

Most notable in this research was the spike in the number of non-graduates who dropped out of the program and did not continue taking classes in year four of their programs. This was consistent with all programs – Master of Science Accounting, Master of Arts, Master of Science Computer Science and Master of Science Nonprofit Management. In addition, it is to be noted that there is a large number of non-graduating students in all programs who were close to completing their degree, but did not. It is the

recommendation of these researchers to further analyze these two issues to look for answers to two questions. They are: (1) What are the variables that cause students who are well into their programs to drop out? (2) Do final thesis or capstone requirements create a hurdle that cannot be overcome?

### **Further Research**

The researchers believe that follow up research is needed to determine how and why students are motivated to complete graduate degrees. We offer the following recommendations to guide the design of further research.

1. Consider a replication of this study to include a larger sample population with another non-profit adult education university.
2. Consider designing a study to examine learning format as a variable. Would a student who takes his/her classes only in an online environment have a different graduation success rate as compared to only a ground-based enrollment or would a combination of online and ground-based enrollment produce an increase in graduation rates.
3. Explore the differences and similarities of learning goals among genders and whether certain graduate degrees with and without goal setting plans predict success.
4. Explore whether age group differences predict success in completion of graduate degrees with and without goal setting requirements.
5. Explore whether active, retired, or reserve military service predicts success in completion of graduate degrees with and without goal setting requirements.
6. In previous research (Collins, 2011) identified additional variables that should be considered in the planning of further research. Thirty graduate students associated with accelerated degree

programs designed for adult learners at three Jesuit Universities were interviewed. Three groups of students were selected from programs at each university, including current students, drop-outs and graduates. The purpose of this qualitative study was to look for connections between goal setting and degree completion. While the study was exploratory, a number of variables that may be associated with learner goal setting and motivation to complete degrees were identified. The variables and sub-variables were as follows:

Variables	Sub-variables
Vision	Perceived personal happiness, workplace success, career enhancement, ambition
Goal setting purpose	Personal development, work/performance, career development, hope, optimism, social support
Goal setting process	Specific, documented goals, measurable goals, challenging goals, goal assessment
Learning program selection	Goal/program congruence
Learning program initiation	Perceived urgency, timeline of goals, learner needs
Learning program continuation	Intrinsic motivation, extrinsic motivation, goal validity, self-efficacy, academic success, feedback, goal changes, value of goals, value of life-long learning
Goal Achievement	Perceived closure, impact on vision, setting new goals

Consideration of these variables in further research seems appropriate to the researchers, given that goal setting as a single variable in the current study did not appear to impact on degree completion. Thus we believe that goal setting may involve a number of variables and sub-variables that have a likely impact on the motivation of adult graduate students to complete their degree. The list of variables above disaggregates goal setting and degree completion into several discrete and we believe measurable parts that have a likely impact on learner motivation to complete degrees. Future research and analysis of these variables should include consideration of these variables.

## **Recommendations**

In response to the results of this research, it may be beneficial for the university to create intervention programs at certain points in students' graduate programs to assist the students towards graduation. Intervention may be needed after completion of the first course, after students have completed 3 years in the program and at a point when students have completed all 30 credits and have not enrolled in thesis or capstone credits.

In conjunction with advisors, faculty and staff at the university it may be important to develop methods to monitor students' progress throughout their degree programs and to put into place additional interventions designed to raise the graduation rates in the programs examined in this study.

Further analysis should be undertaken by the university to determine why some students take one class then drop out. A notable issue in this research was the percentage of students who dropped out in year four, having completed over 30 credit hours of a 36 hour program and dropped out.

The data support the point that the university might need to evaluate the thesis and capstone requirements to determine if they are a roadblock to graduation and determine if changes are needed.

Additionally, in response to this research the university may need to re-evaluate the use of formal goal setting procedures in the MA degree and determine if changes can be made that will increase the motivation of students in this program to complete their degree.

## **Final Remarks**

In conclusion, the researchers hope this study will provide interest for future studies that will continue to examine the processes of students' success in completing their graduate degrees. This research was driven by the authors' professional desires as graduate faculty and one as a graduate

advisor to have college and universities reevaluate their processes designed to offer the guidance and tools necessary to help students achieve their academic and personal goals.

Indeed, as the research suggests, there are certain times in a student's graduate work in which added support and encouragement is needed in order to help ensure success. It is important to understand that adult students are highly motivated and mature abstract thinkers. It is the responsibility of higher education to ensure that students have the assistance needed to be able to be successful.

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1. **Title of the submission:** Science Teacher Leadership: Development and Assessment of Leadership

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## 6. Abstract and/or full paper:

*Leadership for Educators: Academy for Driving Economic Revitalization in Science (LEADERS)* is a National Science Foundation funded mathematics and science partnership that gathers and merges the expertise of four essential entities in the economic revitalization of the Great Lakes Region—K-12 school districts, higher education, the renewable energy industry, and informal science education sites. The LEADERS partnership *share a vision of student-centered education that knits community economic growth with science education*. Specifically, teacher leaders and district level support personnel collaborate with the university, industry partners, and informal science programs in the development of Project-Based Science activities (PBS) that unite education with community economic redevelopment. During the last 4 summers, 22 teacher leaders completed graduate courses in physics, chemistry, environmental science, and engineering. Content courses were team taught by a scientist and a science educator who modeled blending the content with PBS. When the teacher leaders returned to their respective districts, they were responsible for overseeing the design and implementation of PBS activities that connect state and national science standards with relevant applications. One major goal of the project was the development of a cadre of effective teacher leaders who deliver professional development and support to their peers.

### **Leadership Courses**

LEADERS aimed to develop teachers' leadership abilities through a series of three leadership courses and ongoing academic year professional development. The three courses focused the psychology of teaching and learning in science, use of data to improve student achievement, and creating science experiences/curriculum for all students. The leadership courses were connected to the teachers' work in the context of their own classrooms and schools as well as to the professional development sessions that they would deliver monthly to their peers during the academic year. All courses required the teacher leaders to: demonstrate a clear and deep understanding of both the teaching and learning processes in science classrooms as well as of the particular topic of the course; utilize this knowledge in helping their peers advance their professional skills; be a reflective practitioner; and help establish leadership skills within the profession. The individual courses addressed certain domains found in the Model Teacher Leadership Standards (Teacher Leadership Exploratory Consortium, 2011) and over the course of the program, all domains were taught.

The science leadership course on educational psychology was aligned with the following domains from the Model Teacher Leader Standards: Domain I: Fostering a Collaborative Culture to Support Educator Development and Student Learning; Domain II: Accessing and Using Research to Improve Practice and Student Learning; Domain III: Promoting Professional Learning for Continuous Improvement; Domain IV: Facilitating Improvements in Instruction and Student Learning; and Domain VII: Advocating for Student Learning and the Profession. The course focused on designing high quality professional development consistent with psychological principles of student learning of science, developing teachers' leadership skills, gaining skills needed to deal with school reform and change, and gaining

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The science leadership course on theory of social foundations addressed two domains: VI on *Improving Outreach and Collaboration with Families and Community* and VII on *Advocating for Student Learning and the Profession*, from the Teacher Leader Model Standards (Teacher Leadership Exploratory Consortium, 2011) that attend to the importance of outreach and collaboration with families and communities, and advocacy. These domains can be considered specifically as being important to issues of educational equity and diversity that are of prime importance in the science education policy and reform as seen through the Next Generation Science Standards (NGSS), (2013). Specifically, the course used multicultural education research and practice to address the need for science teachers to provide “equitable learning opportunities”(Lee & Buxton, 2010), to capitalize on diversity, and to ensure science learning for all in a robust manner that addressing the connections within and outside classrooms, and at school, district, state, and community levels.

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This presentation focuses on the development of the 22 teacher leaders (through 3 courses) and initial research on the effectiveness of teacher leadership. Syllabi from the three courses, as well as the Model Teacher Leader Rubric, will be shared with the audience. The audience will be engaged in a discussion regarding the utility of the work nationally/internationally.

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# Therapy Dogs with Military Populations: A Primer for Counselor Educators

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## Abstract

Students seeking a graduate degree in counselor education have career plans that include a variety of settings such as government offices, community agencies, and public schools. Counselor educators teach students about contemporary issues facing clients in these varied settings. Increasingly, counselors in a variety of settings are facing combat-related stress. Traditionally, focus of research and intervention was on returning veterans. Currently, counselors see deployment-related mental distress symptoms in military dependents such as children and spouses. A core element of instruction is to present the best practices for dealing with the stress that accompanies military life. Research indicates that utilizing therapy canines is a best practice for assisting in the healing of these clients. The purpose of this article is to provide information for counselor educators on how therapy dogs assist clients with military-related stress. Counselor educators are encouraged to incorporate the topic in curriculum related to the population of military personnel and their families.

Students seeking to enter the field of counselor education may desire to work in settings such as government offices, community agencies or public schools. Counselors-in-training may have dreams of assisting children and adults of all ages. It is becoming increasingly evident that counselors in many settings will work with military personnel or their dependents.

Emerging school counselors are a prime example of students that need training on military issues. The Department of Veteran Affairs (2009) reported that 43% of active service members have children and those born post 9/11 have yet to experience the nation during peacetime. Wailiski et al (2012a) noted the impact of parental deployment on children is often extreme stress. Wailiski et al (2012b) described a workshop for training school counselors to be home-front responders for children experiencing parental separation.

Students planning on working government or community agencies may also find themselves working with military populations. Returning home after a stressful tour of duty in a combat zone can be problematic for some military personnel (Lapierre, et al. 2007; Pietrzak, et al 2009) Redeployment issues run the gambit from career barriers to eating disorders (Clemens & Milsom, 2008; Warner, et al, 2007). Recent professional literature in the area of counseling also suggests that military dependents such as spouses and children are also vulnerable to emotional distress upon the return of a loved-one (Lincoln, et al, 2008; Sheppard, et al, 2010; Verdeli, et al, 2011).

### **Canines and Stress Reduction**

Yount et al. (2012) reported that the presence of a therapeutic dog is effective in decreasing stress in children with attachment disorder, reducing stress in healthy adults, and assisting adults with hypertension. The authors also noted that of the 40% of veterans from Iraq and Afghanistan diagnosed with Post-Traumatic Stress Disorder (PTSD), 60 % of the diagnosed Veterans still met the criteria for PTSD. Yount et al. posit that there is an absolute need for adjunctive treatments for PTSD are explored to measure if outcomes are improved. It appears that the use of therapeutic dogs is an effective complement to traditional counseling. Yount et al

conducted a study of veterans training therapy dogs and found significant improvements in their mental health function, including:

- Increase in patience, impulse control, emotional regulation
- Improved ability to display affect, decrease emotional numbness
- Improved sleep
- Decreased depression, increase in positive sense of purpose
- Decrease in startle response
- Decrease in pain medications
- Increased sense of belongingness/acceptance
- Increase in assertiveness skills
- Improved parenting skills and family dynamics
- Fewer war stories and more in the moment thinking
- Lowered stress levels, increased sense of calm (Yount et al., 2012, p. 65).

The benefit of trained canines for stress reduction has been articulated by other researchers. Shubert (2012) reported that therapy dogs were employed soon after the 2001 bombing of the World Trade Center, an act that began military combat campaigns in Iraq and Afghanistan. The dogs assisted with calming first-responders to the incident. Ritchie and Amaker (2012) noted the rise in the visibility of therapy dogs. The authors posit that canines specifically trained to assist children and adults with PTSD have proven to be effective. The authors collected anecdotal reports from clients at a veteran center. The quotes include:

I used to take five different medications for my PTSD. Now I take two.

I could not be in malls or other crowded places. Now, with my dog, I can tolerate them, knowing he will rescue me.

When my husband returned from Iraq, he was a jerk. Since we got our dog, we have reunited as a family.

When I have a nightmare, he puts his muzzle into my face, and the nightmare stops (p. 6).

### **Canines in Curriculum**

Counselor educators can serve as advocates for military populations. Reynolds and Osterlund (2011) reported that counselor education curriculum could be enhanced to foster not only awareness of the issues facing military but also treatment strategies. Chandler et al (2010) noted that creating awareness of the use of therapy dogs is not strong enough to be effective. Counselors need to be trained in matching techniques with theoretical approaches. Students in school counseling programs can also benefit from curriculum that includes therapy canines. Cole (2012) concluded that an essential role of school counselors is to partner with military families. Additionally, working with military children fulfills the American School Counselor Association (ASCA) standard for acting as “collaborators, supporters, and leaders (p.6)”.

Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) have been the longest combat campaigns in American history. It is estimated that nearly 3 million military personnel have served at least one tour of duty and approximately 2 million children have experienced a deployed parent. There is ample evidence cited in professional literature of the immediate mental health needs of military populations affected by deployments. One intervention that is showing an increase in use and effectiveness is the therapy canine. Reports indicate that therapy dogs can reduce military-related stress in both children and adults. Using

therapy canines is emerging as a best practice for counseling military populations. Infusing the topic of therapy canines into counselor education curriculum aimed at military populations aligns with standards in the field of counseling and counselor education.

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Alaska's Exemplary Program: The Rural Alaska Honors Institute  
Let's Dig in the Dirt!

Begun in 1983, RAHI – the Rural Alaska Honors Institute - is a six-week college-preparatory summer bridge program on the University of Alaska Fairbanks campus for Alaska Native and rural high school juniors and seniors. Students take classes that earn them 7-10 college credits. A program of rigorous academic activity combines with social, cultural, and recreational activities to make up the RAHI program of early preparation for college. Students are purposely stretched beyond their comfort levels academically and socially to prepare for the big step from home or village to a large culturally western urban campus.

All of this effort and activity support the principal goal of RAHI: promoting academic success for rural students in college. RAHI boasts thirty-one years of successfully educating over 1,500 students. Of these students, 688 have received degrees ranging from a medical doctor, eight lawyers, two PhDs, two doctors of pharmacy, two doctors of physical therapy, 73 masters, 334 bachelors, 172 associates, and 93 certificates. This semester, over 250 alum are presently attending college.

This summer eight students continued their RAHI adventure by flying into a remote Alaskan lake to participate in an archaeological dig into one of the oldest archaeological sites in the nation. During the two weeks, these students learned proper archaeological practices, actually excavating items, identifying and cataloging them, culminating in a video. This video (3 minute version and a 20 minute version) is completely produced by the students, highlighting what they found interesting and incorporating various Alaska Native cultures into their daily dig.

If there is an appropriate format, I propose to show the video, with an explanation of the program, site, and lessons learned about participating in an archaeological dig in a remote site, with minors, extremely limited electricity, very limited cell phone coverage, food preparation for people in a remote site, tent living, interaction with various animals of the region, and how to interact with tribal members.

RAHI understands the importance of indigenous knowledge from various remote regions and ensures students have a support system of incorporating academia and Native culture. All of this effort and activity support the principal goal of RAHI in promoting academic success for rural students in college. This presentation and video will present findings showing that early engagement in RAHI, utilizing Indigenous Knowledge Systems, leads to successful higher educational degree.

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Presentation Format: Poster or Session

Topic Area of Submission – any of those listed below:

Indigenous Education  
Rural Education  
Other Areas of Education  
Best Practices

## Why Did We Leave No Trace?

At the edge of the Arctic Ocean, we traveled out onto the ice pack in search of food and furs. After spring arrives, throughout the summer we would travel inland towards the Alaska's Brooks Range, searching, always searching...for food. Through the mountain passes, the bush planes flew in suitable weather and the bear, moose, and caribou would migrate. We, like the animals, have become nomadic again, following the animals in season and fishing in mountain lakes and streams.

We shared our life together, living on the edge of the Arctic Ocean. Mark grew up in Barrow, Alaska, the farthest north Inupiaq Eskimo community. Denise joined him as his wife and together they started their family. For ten years we lived a subsistence lifestyle. We will show a power point presentation and discuss ways in which we lived on the land, with winter temperatures dropping to -50F and summers of mosquitoes chasing us and the caribou across the tundra. Always moving, but leaving no evidence of being there...

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**Hawaii International Conference on Education  
Proceedings Submission  
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**Title of Submission:** Leveraging Social Recruiting Strategies to Attract STEM Teacher Candidates to Rural Schools

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## Abstract

Attracting STEM teachers to rural schools is a challenge many districts face. The Grambling State University Alternative Teacher Certification Project is designed to attract STEM teacher candidates to “hard to staff” school districts in the north Louisiana region. The Project has modified its recruitment plan to include an increased focus on current social media recruiting strategies. Social media recruiting strategies have been successful in attracting STEM teacher candidates to the Project. These strategies provide an effective platform for recruiters to build two-way communication and consistently engage potential teacher candidates. This platform facilitates the trajectory of contact to applicant to teacher candidate. Additionally, the appeal of lower cost to organizations also makes social media an attractive recruiting method.

*Keywords: STEM, teacher education, recruitment, social media*

**Hawaii International Conference on Education  
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**Title of Submission:** Leveraging Social Recruiting Strategies to Attract STEM Teacher Candidates to Rural Schools

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## Abstract

Attracting STEM teachers to rural schools is a challenge many districts face. The Grambling State University Alternative Teacher Certification Project is designed to attract STEM teacher candidates to “hard to staff” school districts in the north Louisiana region. The Project has modified its recruitment plan to include an increased focus on current social media recruiting strategies. Social media recruiting strategies have been successful in attracting STEM teacher candidates to the Project. These strategies provide an effective platform for recruiters to build two-way communication and consistently engage potential teacher candidates. This platform facilitates the trajectory of contact to applicant to teacher candidate. Additionally, the appeal of lower cost to organizations also makes social media an attractive recruiting method.

*Keywords: STEM, teacher education, recruitment, social media*

**2014 Hawaii International Conference on Education  
Presentation Proposal**

1. **TITLE: Collaborative Teacher Inquiry in Grade 9 Mathematics: Using a Conceptual Framework to Improve Student Achievement**
2. **TOPIC AREA:** Mathematics teacher education
3. **PRESENTATION FORMAT:** **paper session**
4. **DESCRIPTION:**

This paper describes a project that focused on the improvement of instructional strategies in Grade 9 Applied level mathematics. Participants included teachers, department heads leaders, and administrators from 12 secondary schools in two Canadian urban school districts. A conceptual framework helped participants to focus on obtainable goals for school improvement. Student achievement on provincial large-scale assessment tests increased over 109% in the four years. The strategies and teaching practices will be described in the presentation.

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# **Collaborative Teacher Inquiry in Grade 9 Mathematics: Using a Conceptual Framework to Improve Student Achievement**

## **Introduction**

The Collaborative Teacher Inquiry Project focused on the improvement of instructional strategies in Grade 9 Applied level mathematics, with the goal of improving student achievement and engagement in mathematics. The Learning Consortium is a partnership between the University and four urban school districts in the Greater Toronto Area. From these four school districts, 12 schools participated in the project, which spanned from December 2008 to May 2010. We had five of the 12 schools continue and we added five more schools from December 2010 to June 2012. Participants included teachers, department heads/curriculum leaders, and administrators.

The purposes of this project were to: 1) improve the teaching and learning of Grade 9 Applied mathematics and 2) investigate collaborative inquiry as professional development strategy.

## **Literature Review**

The connections between the vision of communities of practice and the vision of reform-minded professional development for teachers are clear. Schlager (2000) states that research is converging on a common set of effective professional development characteristics and strategies that stem largely from concepts about communities of practice. In a meta-analysis of professional development initiatives, Wilson and Berne (1999) concluded that “effective efforts all (a) involve communities of learners redefining teaching practice, (b) seek to activate (rather than deliver) teacher learning, and (c) privilege teachers’ interactions with one another” (p. 194).

Recent innovations in professional learning for teachers have included a wide variety of collaborative approaches to professional development. Terminology that has been used to characterize such efforts includes artisan communities, collaborative learning communities, communities of practice, and professional learning communities (DuFour, 2004; Haberman, 2004; Talbert & McLaughlin, 2002) among a host of other, lesser-used terms. Such a widespread lexicon is indicative of the range of the theoretical stance of researchers.

## **The Ten Dimensions of Mathematics Education Framework**

There is no single set of attributes that characterizes what good mathematics programs should contain but we can identify central tendencies that distinguish various teaching approaches. The Ten Dimensions of Mathematics Education is a framework that breaks down the essential components of a successful mathematics education program (McDougall, 2004; Ross, McDougall, Hogaboam-Gray & LeSage, 2003). The dimensions overlap and together constitute an orientation to instruction that differs from traditional practice. The Ten Dimensions are (1) Program Scope and Planning: Teachers consider curriculum strands, expectations, outcomes, process, and key concepts when planning a mathematics program; (2) Meeting Individual Needs: Teachers engage all students in complex problem solving, providing appropriate levels of support; (3) Learning Environment: Teachers use appropriate physical classroom organizations and student groupings to promote learning; (4) Student Tasks: Student tasks are intricate, open-ended problems embedded in real life contexts; many of these problems do not afford a single solution. Skill and procedural work can be engaging and meaningful; (5) Constructing Knowledge: Teachers use different instructional strategies and questioning techniques to help students construct knowledge; (6) Communicating with Parents: Communication about student achievement and the mathematics program is through a variety of media; (7) Manipulatives and Technology: Mathematical problems are undertaken in reformed classes with the aid of manipulatives and with ready access to mathematical tools - calculators and computers; (8) Students' Mathematics Communication: Instruction in reformed classes focuses on the construction of mathematical ideas through student communication – oral, written and physical; (9) Assessment: Transparent and authentic assessment is integrated with everyday events and taps a wide variety of abilities through diagnostic, formative and summative strategies; and (10) Teacher Attitude and Comfort with Mathematics: Teachers attitudes towards mathematics and comfort with the subject matter affects student learning.

### **Method**

The participating schools created an implementation team of administrators and teachers. This team met to discuss mathematics improvement in their school as part of the Learning Consortium's project. The participants attended in-service sessions, were visited by the principal investigator and director of the consortium, and completed personal reflections about their participation in the Collaborative Teacher Inquiry Project. There were three professional

development days, focusing on assessment, technology and data analysis in each of the fourschool years.

### **Data Sources**

The University research team interviewed the teachers and department heads/curriculum leaders in the schools to learn about their understanding of mathematics improvement, mathematics teaching and learning, and school success. We also attended some meetings of the mathematics implementation teams at their schools. Their discussions were about the collaborative inquiry process, and implementation plans for each school. We used a survey to learn about the areas for improvement.

### **Interviews**

We interviewed the teachers and department heads/curriculum leaders involved in the project. The participants had an opportunity to indicate that they did not want to participate in the research component of the project. Each interview was 45 minutes in length. They were audiotaped and transcribed.

### **Attitudes and Practice for Teaching Math Survey**

The survey instrument has been used in a number of other mathematics reform studies. This self-assessment survey now consists of 20 Likert (agree-disagree) items. The survey provides a simple and practical starting point for collecting information about teacher's current attitudes and practices surrounding the Ten Dimensions.

The project teachers and administrators then completed the Attitude and Beliefs Survey to determine how their current practices fared with respect to current mathematics education trends (McDougall, 2004; Ross, McDougall, Hogaboam-Gray & LeSage, 2003). Each of the 20 Likert (agree-disagree) questions on the survey is related specifically to one or more of the Ten Dimensions and the higher the score on each dimension, the more the educator's attitude and teaching practices are aligned to reform trends. A low score may be impetus for the educator to focus on that particular dimension for personal growth. An overall score is given to the educator and a high score in this capacity means that the educator corresponds with current mathematics thinking and is an indicator of how open the educator is to change (McDougall, 2004; McDougall, Ross & Ben Jaafar, 2006).

### **Findings**

Each school identified two dimensions from the Ten Dimensions of Mathematics Education (McDougall, 2004). This section will identify the findings from the schools that focus on four dimensions of the study. The staff at Ada Lovelace School was eager to improve their teaching practices. The teachers mentioned being open to professional development days and enjoy sharing their experiences with other educators. The teachers praised the opportunity to work with the Learning Consortium and select a specific topic to focus on.

At David Hilbert School, teachers set their own goals and create annual learning plans. For the teachers, selecting one or two of the Ten Dimensions of Mathematics Education keeps them focused on their goals for professional growth. Teachers also seek out other opportunities to improve their practices including Honours Specialist courses and workshops.

The teachers at Evariste Galois School mentioned that technology and student tasks were their primary dimensions. The head of the department stated: “We selected two dimensions to work with. The first dimension we chose was student-based activities; the other one was incorporating more technology into the classroom” (EG1, Interview).

The teachers at Srinivasa Ramanujan School have very similar teaching philosophies and professional goals. All participants felt that student motivation was lacking in the Grade 9 Applied classes at their school and wanted to select dimensions that would help to improve this component.

In the Collaborative Teacher Inquiry Project, teachers identified their professional development goals using the Ten Dimensions of Mathematics Education framework. The Attitudes and Beliefs Survey was administered to help teachers and administrators identify the two dimensions that the school and teachers would focus on for the duration of the project. Some schools used these dimensions to keep them focused on their goals for professional development. One school felt that the dimensions identified ten areas that they could focus on and improve.

The Learning Consortium’s Collaborative Teacher Inquiry Project sought to improve the teaching and learning of Grade 9 Applied mathematics by encouraging teachers to work collaboratively on areas of foci as outlined by the Ten Dimensions of Mathematics Education. As a result of this project, teaching teams were able to set goals and definitions of student success for students at their school. Their discussions led to shared initiatives to create new culminating and EQAO preparation tasks, among others. The Ten Dimensions of Mathematics Education allowed participants to focus on obtainable goals for school improvement as opposed

to trying to improve their mathematics program in a general context. Although teachers and administrators face many challenges, opportunities such as the Collaborative Teacher Inquiry Project provide support and encouragement for professionals seeking to improve their mathematics programs and ultimately help students reach their full potential.

## **Discussion**

The primary benefits of the project are that the teachers and administrators have collaboratively investigated, discussed and implemented evidence-based teaching and assessment strategies and techniques in the Grade 9 Applied mathematics course, and have seen improvement in the achievement of their students as a result. The teachers and administrators have learned strategies that proved successful for other teachers in the school boards as they planned and implemented improvement in Grade 9 Applied mathematics courses.

Teachers identified their professional development goals using the Ten Dimensions of Mathematics Education framework. The Attitudes and Beliefs Survey was administered to help teachers and administrators identify the two dimensions that the school and teachers would focus on for the project. Some schools used these dimensions to keep them focused on their goals for professional development. All schools felt that the dimensions identified ten areas in which they could focus on and improve.

The teachers and administrators were particularly impressed with the over 100% increase in provincial large-scale scores for the Grade 9 students. Some schools increased over 250% in two years, based on using the strategies and teaching practices taught and supported by the professional development activities. In the session, these strategies will be described in more detail.

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***Abstract for:***

***Do You Have Great Expectations for Your Teens?***

The Great Expectations for Teens (GET) program is a 54 hour fortune 500 college and career readiness process that builds and reinforces the 10 life and leadership skills top colleges and employers say they want and need in students and employees. Research shows that employers are facing an ill-equipped emerging workforce deficient in the “soft skills” areas of leadership, teamwork, critical thinking, problem solving and decision-making. Economists Drs. James Heckman and Flavio Cunha explained in the America’s Promise Alliance report (2007) that these soft skills are just as essential to a young person’s success as the more frequently cited academic indicators. In fact, both federal and international commissions have concluded that these skills are essential prerequisites for high school graduates to enter the workforce and college successfully. Unfortunately, there exists today a significant gap between the level of soft skills that future workers need and the level of these skills that they now possess. The data showed that young people lack not only the skills themselves but important opportunities to develop them.

The Great Expectations for Teens program addresses all these concerns and more. Results analyzed at 5 levels and from 2 perspectives (college & career readiness) found the following:

- The cumulative growth rate (i.e. of all students combined) averaged 181% per key skill area, more than twice the Adult industry average.
- 93% of participants reported significant improvements in their *school grades* as a direct result of the program
- 100% of participants reported a significant increase in their *personal aspirations, standards and expectations* as a direct result of the program
- Student growth rates in each of the 10 key skill areas exceeded the related ASTD industry average in 100% of all cases (self-confidence & self-esteem 150%, Leadership & Character Development 200%, Interpersonal & Social Skills 180%, Oral Communications Skills 190%, Public Speaking Skills 230%, Goal Setting & Goal-Execution Skills 180%, Appearance & Demeanor 140%, Positive Mental Attitude 150%, Thriving Under Pressure 150% and Avoiding the 10 Major Life Derailers 160%).

For further information about the GET program, please e-mail:

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**TITLE:** What's the Big Idea? Developing a Fat Pedagogy in Higher Education

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**This submission contains the ABSTRACTS for our panel presentation.**

**Hawaii International Conference on Education  
12<sup>th</sup> Annual Conference  
January 5-8<sup>th</sup>, 2014  
Honolulu, Hawaii**

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1. **TITLE:** What's the Big Idea? Developing a Fat Pedagogy in Higher Education
2. **TOPIC AREA:** Higher Education
3. **PRESENTATION FORMAT:** Panel Session
4. **DESCRIPTION:** Weight-based oppression is a growing problem that is manifested across societal institutions resulting in economic, medical, and psychosocial hardship for those who experience this form of discrimination. The emerging field of Fat Studies brings attention to this social justice issue via scholarship, teaching, and activism. In this panel we elucidate the basic principles of the field and share our experiences teaching about this topic in various higher education contexts. We will conclude with key tenets of what we are calling a "fat pedagogy," inviting participants to share how they might incorporate this pedagogical approach into their own courses.
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**Panel Chair/Discussant: Patti Lou Watkins, School of Psychological Science, Oregon State University, USA, [pwatkins@oregonstate.edu](mailto:pwatkins@oregonstate.edu)**

### **Session Summary**

Due to growing cultural discourses surrounding “bodies at risk” and a “society at risk” (Azzarito, 2007), obesity has become a central issue in schools where students’ bodies are increasingly turned into political sites of privilege and oppression through the (self)regulation, disciplining, degradation, and surveying of bodies (Monaghan, 2010; O’Brien, Hunter, & Banks, 2007). These repressive forms of power are not only informing but governing the way students regard, learn about, live with, and relate to their bodies and the bodies of others (Wright & Harwood, 2009). A growing body of literature points to the harmful consequences of this dominant obesity discourse within educational contexts and the need to develop teaching strategies that disrupt weight-related intolerance, insensitivity, and discrimination (Boling, 2011; Cameron et al., in press; Evans & Rich, 2011; Evans, Rich, Davies, & Allwood, 2008; Guthman, 2009; Mansfield, & Rich, 2013; Puhl, 2011; Puhl & Heuer, 2009; Russell, Cameron, Socha, & McNinch, in press)

The objectives of this session are: 1) to bring attention to weight-based oppression as an important social justice issue for educators in higher education; 2) to highlight the emergent field of Fat Studies and how educators are endeavoring to disrupt weight-related oppression, intolerance, insensitivity, and discrimination within their classes; and 3) to outline the key tenets of what we are calling a ‘fat pedagogy.’ To conclude, we will argue that educators need to seriously consider sizism, especially given its links to classism, racism, sexism and ableism. Drawing on insights from critical pedagogy and social justice education, we will argue that now is the time for critical educators to work to disrupt fat oppression and embrace people of all sizes and shapes.

### **Paper/Presentation Summaries:**

**Title: Inclusion of Fat Studies in a Difference, Power, and Discrimination Curriculum**  
**Presenter: Patti Lou Watkins, Oregon State University, USA, [pwatkins@oregonstate.edu](mailto:pwatkins@oregonstate.edu)**

Until recently, differences based on body weight, shape, and size have received little attention in diversity discussions, nor have they been the focus of diversity-oriented college classes. However, weight-bias has a long history in western culture (Rothblum & Solovay, 2009), increasing exponentially over the past decade (Andreyeva, Puhl, & Brownell, 2006). Furthermore, it intersects with bias based on other areas of difference, especially gender and race. Consequently, scholars now recognize weightism as a social justice issue on par with racism (Puhl, Andreyeva, & Brownell, 2008). College courses have begun to integrate lessons on weightism, with several focused solely on this topic (Watkins, Farrell, & Doyle-Hugmeyer, 2012). These courses reflect the emergent, interdisciplinary field of Fat Studies which is akin to Women’s Studies and fields of inquiry based on race that evolved from grassroots activism and political movements to resist discrimination. Like Queer Studies, Fat Studies reclaims the historically pejorative word “fat” as a form of resistance to inequities perpetrated around this category of difference.

This presentation depicts the development and dissemination of a Fat Studies course that is part of a university’s Difference, Power, & Discrimination curriculum. This upper division/graduate class, cross-

listed between Psychology and Women, Gender & Sexuality Studies, typically enrolls students from these majors along with students from the Colleges of Education and Public Health & Human Science. As the catalogue states, “the course frames weight-based oppression as a social justice issue, exploring forms of activism used to counter weightism perpetuated throughout various societal institutions.” Consistent with critical pedagogy (McArthur, 2010), students themselves engage in activism projects to promote social justice beyond the classroom. Qualitative data derived from written assignments illustrate course content and its impact on students, including changes in beliefs and behavior surrounding weight with respect to themselves and others. Employing standpoint theory (MacDonald, 2002), students were encouraged to scrutinize their own life experiences to create an understanding about systems of oppression through personal testimony. As such, they came to recognize weightism as a structural, systemic social justice issue rather than maintain the traditional view that fat bodies are inherently flawed. This transformative pedagogical approach allowed students to resist hegemonic discourse, potentially empowering those whose bodies have been marginalized and creating allies among those whose bodies have conferred privilege. Further, many students vowed to conduct their future careers as teachers, counselors, and health care workers in ways that counteract weightism.

**Title: Experiences Incorporating Fat Pedagogy into Fashion Design Courses to Bring Attention to Weight-Based Oppression in Higher Education**

**Presenter: Debbie Christel, West Virginia University, USA, [Deborah.Christel@mail.wvu.edu](mailto:Deborah.Christel@mail.wvu.edu)**

As a professor traditionally trained in fashion design I teach courses that involve in depth analysis, contact and conversation about the shape, size and aesthetics of the human body. This offers a multitude of opportunities to address weight based oppression in fashion and merchandising in higher education. This presentation will incorporate resources and assignments used in classes, and student responses drawn from these assignments will be used to exemplify their receptivity to these Fat Studies ideas. Clothing and personal appearance are universal aspects of daily life and used as a means of aesthetic expression. However, not all humans have equal access and the opportunity to express themselves through clothing. Studies demonstrate that frustration experienced during clothes shopping is a common experience for plus size consumers (Moin, 2011; Colls, 2006; Chowdhary & Beale, 1988; McReaddy, 1988; Cooper, 1998). In addition, other types of frustration for fat women exist in the form of “limited selection of styles, virtually no contemporary styles, and apparel retailers' and manufacturers' reluctance to be affiliated with large sizes” (McReaddy, 1988, p. 20). The fashion industry offers certain styles in limited sizing which in turn structures our society in such a way that only certain sizes can participate in choosing and wearing fashionable clothing.

Incorporating Fat Pedagogy into apparel design courses may reduce the bias and negative assumptions about fat bodies. A few techniques that were well received by students included the use of fat mannequins and a strict ‘no-body talk’ policy. In response to these techniques students report feeling more accepting of their bodies and other bodies. Through the experience of teaching design techniques for fat bodies, students have also reported an interest in working for plus-size retailers. Without Fat Pedagogy in Fashion Design courses (and other majors), students may not consider providing services or working for this demographic. There is a growing need for educators to consider incorporating anti-oppressive teaching practices that may greatly impact how society views fat bodies.

**Title: Teaching the Fat Body: A Consideration for the Social Sciences****Presenter: Cat Pausé, PhD, Massey University, New Zealand, c.pause@massey.ac.nz**

That we live in a thin world has been asserted by Fat Studies scholars and fat activists for decades (Pausé, 2012). Slim bodies are constructed as moral beings; as disciplined, active, attractive, and successful (Jutel, 2005). Fat bodies are constructed as immoral beings; as undisciplined, lazy, disgusting, and undesirable (Murray, 2008). The anti-fat attitudes that result from these beliefs influence the everyday lives of individuals of all sizes, including within the classroom. In both the interactions between the classroom participants (teacher-student, student-student, student-teacher) and the treatment of bodies within the subject material, normative messages of bodies, and the subsequent reinforcement of anti-fat attitudes, are common. Educators interested in issues of social justice must allow body size to have a place beside the commitment to issues of gender, race, ability, sexual orientation, etc (hooks, 1994; Freire, 1970).

How do those of us not teaching courses in Fat Studies incorporate body size social justice into our classroom (Watkins, Farrell, & Doyle Hugmeyer, 2012)? How may we recognize that the bodies of our students, and the bodies involved in our subject area, are political? In this presentation, I consider ways that those in the social sciences may include consideration of fat politics into the classroom (Koppelman, 2009). Working from a feminist perspective, theoretical and methodological frameworks for incorporating social justice into University teaching will be examined. Special attention will be given to exploring how social media may be used as a tool for engaging in fat pedagogy (Harding & Kirby, 2009).

**Title: A Modest Pedagogy: Challenging Obesity Discourses in the Health Sciences****Presenter: Erin Cameron, Lakehead University, Canada, emcarte1@lakeheadu.ca**

Increasingly, weight-based bullying has shown to negatively impact students' self-esteem, perceptions of safety in schools, and school achievement (Weinstock & Krehbiel, 2009). Given the growing body of evidence around the negative impacts of weight bias and stigma in educational contexts (Puhl & Heuer, 2009), more needs to be done to work towards addressing the [in]justices of an educational climate that privileges certain body types and marginalizes others. As such, creating safe learning spaces for all students, regardless of size, and employing teaching strategies that disrupt weight-based oppression is, therefore, ever more important. To date a handful of studies have examined various teaching strategies to address weight-based oppression (Boling, 2011; Escalera, 2009; Guthman, 2009; Koppelman, 2009), but there is a growing need for more novel studies that are broader in scope and based in a range of perspectives (Watkins, Farrell, & Hugmeyer, 2012).

Informed by feminist, poststructural, and critical theory, this study details the "modest pedagogy" (Tinning, 2002, 2011) approach taken in a graduate course titled "Obesity Discourses in Society, Education, and Health Care" and provides a critical analysis of the student experience and perceived effectiveness of this approach, drawing upon reflective journal entries, reading responses, and open-ended semi-structured student interviews. As a result, this paper will illustrate the effectiveness of engaging different rhetorical frames and analytic voices of critique and truth, voices of rage about injustices, and personal voices of lived stories and culture in teaching about issues of weight, obesity, and fatness, using a critical lens. Moreover this paper will argue that education institutions serve as powerful pedagogical sites where teaching practices serve to train students' perceptions of what's

valued, privileged, and normal in the name of health and life. As such, there is a growing need for critical educators for social justice to consider issues of weight, obesity, and fatness and to consider using anti-oppressive teaching practices that disrupt body-related intolerance, insensitivity, and discrimination.

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## 6. Abstract:

### **Effect of Quality of Teacher Toward Early Childhood Development**

Bondan Sikoki, Nasirudin, Fita Herawati, Ni Wayan Suriastini

Quality of teacher is one fundamental aspect of academic activity, beside the learning facilities and learning method. A teacher's individual characteristic not only affect his/her job but also student's development, this is especially important in the early stage of child development.

This paper aims to to document quality of teacher in the play group and kinder garden and to learn about the association between quality of teacher and child capacity development. This paper used data from study of 360 play groups and kinder gardens conducted in Yogyakarta City and Bantul district of Indonesia, based on interview with the school principals/caretaker and teachers of those facilities, and also with 1,800 parents about their children.

Analysis was conducted based on school's qualification standards regarding teacher qualification and competence standard. Evidence showed that teacher with D2/PGTK (teacher college) qualification count for 67.52% in kindergarten, 44.59% in playgroup. While for competence standard, the study found that teacher competence on understanding children development was still very low, that is on average below 50% for all age groups, regarding children development on religious and morality value, cognitive, gross motor skill, fine motor skill, language and social emotional aspects.

Under-qualification and under-competence of teacher will be compared with data of child capacity development from 1,800 children of 360 play groups and kinder gardens reported by the parents to see how those quality aspects affect the child capacity development. It is expected that teacher quality will affect more on child cognitive and motoric development than on value, language and social emotional aspects .The preliminary result showed that teacher quality on understanding child development correlates positively with cognitive, fine motor skill, language and social emotional development of the children. Teacher who understand child development of their student development improved cognitive skill of the children 1.79 time better. On fine motor skill the improvement is 1.81 times, language skill 1.63 times and social emotional skill 1.73 times better than child with teacher who have less understanding child development.

Efforts on increasing teacher's awareness on child development in play groups and kinder gardens urgently need to be in placed not only by the government but also by the other stakeholders such as universities, private sectors, CSOs, including the community its self. It requires joint effort towards improvement of the quality and standard of kinder garden and play group in Indonesia.

## **Title Page**

### **Title**

Analytics in Education: A Beacon of Enlightenment for Excellence

### **Topic Area**

Educational Measurement and Evaluation

Educational Policy and Leadership

### **Presentation Format**

Paper Session

### **Presentation Description**

The presentation will address the critical need of analytics in both K-12 and Higher Education to enable educators from both levels to use data that has been empirically analyzed to show the strengths and weaknesses of educational teaching and learning methods. It will also address teaching methods that embrace analytics in the teaching approach.

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Analytics in Education:  
A Beacon of Enlightenment for Excellence

By E. George Beckwith, Ed. D.

National University

San Diego

October 2013

### Abstract

Analytics is defined as “The use of data, statistical analysis, and explanatory and predictive models to gain insights and act on complex issues.” Review of the literature on Analytics in higher education validates that many colleges and universities have demonstrated that analytics can help significantly advance a college or university in such strategic areas as resource allocation, student success, and finance (EDUCASE Center for Applied Research, 2012). There are other areas, however, that have great potential for advancing the effectiveness of an educational institution, such as degree cost, resource optimization, and multiple administrative functions, that have not used analytics methods to enlighten educational leaders on more effective utilization.

Even in the areas where some colleges and universities have used analytics effectively, the majority of both Higher Education and K-12 institutions have not embraced analytics to aid in their strategic planning of their educational programs, teaching and learning strategies, or educational costs—both from the institution’s or student’s/parent’s points of interest. Other fields such as Science, Technology, Engineering, Medical/Health, and Business/Management are, on a large scale, actively using analytics to guide their strategic planning and decision making. Education needs to follow their example. This paper reviews the current analytics success stories at both K-12 and Higher Education institutions and addresses the potential for analytics to significantly change how these, and potentially other, institutions use available data to make critical strategic decisions about education.

## Introduction

*What in the world is analytics?*

There is a ring of familiarity about the term “analytics” but ask anyone to define it and note the momentary pause before a response is received. Wikipedia (2013) defines it as follows: *Analytics is the discovery and communication of meaningful patterns in data. Especially valuable in areas rich with recorded information, analytics relies on the simultaneous application of statistics, computer programming, and operations research to quantify performance. It favors data visualization to communicate insight.* EDUCAUSE, a nonprofit membership association created to support those who lead, manage, and use information technology to benefit higher education defines analytics more precisely and briefly: *Analytics is the use of data, statistical analysis, and explanatory and predictive models to gain insights and act on complex issues (2010).* The New Media Consortium (NMC), in their 2012 Horizon Report stated that *the goal of analytics is to enable teachers and schools to tailor educational opportunities to each student’s level of need and ability in close-to-real time. Analytics that are used in education are increasingly being labeled learning analytics.*

Learning analytics is not just analysis. Though it does use descriptive and predictive models to gain valuable knowledge from data, it does not stop there. It uses the insight gained from analysis to recommend action and/or to guide decision making and communication. Analytics is not, therefore, so much concerned with individual analyses or analysis steps, but with the entire methodology (Wikipedia, 2009). Tools and techniques once confined to research laboratories are being adopted by forward-looking industries to generate business intelligence for improving decision making (U.S Dept. of Ed., 2009). U.S. Dept. of Ed report (2009) found that

higher education institutions are beginning to use analytics for improving the services they provide and for increasing student grades and retention. The McKinsey Global Institute (Norris and Baer, 2013) did an analysis across 20 sectors and in every category except talent, found that *education* was the least prepared for ease of data capture, capacity for IT intensity, the data-driven mind-set, and was least likely to have overall data availability.

### *Analytics Not New to Education*

To imply, however, that educators have not and are not using analytics techniques will quickly raise objections by many educators who will argue, probably fairly, that the core concept of analytics (or learning analytics) is not new to educators and that it has been in existence for several decades in education theory and practice (Yuan, 2013). They will tell you that good teaching practice has, for a long time, involved the paper and pen recording of information that is analyzed and reflected upon for decisions regarding interventions pertaining to individual students or classes. At the same time, rather than the narrow focus on individual students and classes, researchers in the educational data mining field and analytics have an extensive history of developing tools and techniques to make use of data to improve teaching and learning as well as education as a whole (Yuan, 2013).

There is a gap, however, between what technology is capable of doing and what people can do, without analytics techniques, with existing data sources and tools. According to Yuan (2013), it has only been in recent years, due to the increasing use of technology in education, that more and more personal information and detailed records on learning activities and assessment have become available. He postulates that the development of new technologies and tools that lower the technical and cost barrier of taking on such data analysis makes it possible for

educators to gain insight from various sources to achieve efficiency and effectiveness and improve students' performances.

### *Increased Use of Analytics in Education*

Even so, analytics is beginning to be increasingly used in education, particularly at the district and government office levels (U.S. Dept. of Ed, 2009). However, the complexity of student performance measures presents challenges when educators try to understand and use analytics to discern patterns in student performance, predict graduation likelihood, improve chances of student success, etc. For example, in a study involving districts known for strong data use, 48% of teachers had difficulty posing questions prompted by data, 36% did not comprehend given data, and 52% incorrectly interpreted data (U.S. Dept. of Ed., 2009). To combat this, some analytics tools for educators adhere to an over-the-counter data format (embedding labels, supplemental documentation, and a help system, and making key package/display and content decisions) to improve educators' understanding and use of the analytics being displayed. Analytics is also being used increasingly in higher education.

### *EDUCAUSE Analytics Findings*

EDUCAUSE, a nonprofit membership association created to support those who lead, manage, and use information technology to benefit higher education, has done some revealing research on analytics (EDUCAUSE, 2010). They cite the case of Professor Donaldson who teaches introductory chemistry at a large state university which they do not name. He uses an analytics program linked to the learning management system (LMS) that helps him monitor the progress of the more than 500 students in his lecture class by compiling and analyzing

information like the number of times class notes are viewed, the frequency of contributions to the discussion board, and quiz grades (EDUCAUSE, 2010). He uses an application dashboard, from which he can see an indicator beside each student's name, reflecting the program's assessment of the likelihood that the student is on track to earn a C or better in the course. He can instantly see which student or students are at an elevated risk by a color code in which statistically, green denotes high likelihood, yellow suggests possible risk, and red indicates an elevated risk. Based on the information from his dashboard, Donaldson can then send an e-mail to notify students if they appear at risk, congratulate them for work well done, or suggest ways to get more from the class.

EDUCAUSE (2010) believes that colleges and universities can utilize the power of analytics to advance and promote such critical areas as student recruitment policies, course catalog offerings, hiring needs, and financial decisions. In a teaching and learning context, data from such sources as the learning management system, college application forms, and library records can be used to build academic analytics programs that use algorithms to construct predictive models that can identify students at risk for not succeeding academically (EDUCAUSE, 2010).

### *Close-to-Real Time Analytics*

The New Media Consortium, in international community of educational technology practitioners to include hundreds of U.S. Colleges and Universities advocates using analytics in close-to-real time and by doing so enable faculty to more precisely understand students' learning needs and to tailor instruction appropriately and far more accurately and far sooner than is now possible (NMC Horizon Report, 2012). By offering information in near real time, learning

analytics can support immediate adjustments, suggesting a model of curriculum that is more fluid and open to change.

*The U.S. Department of Education Report on Data Mining and Learning Analytics*

Learning analytics, as it is currently contrasted with data mining, focuses on applying tools and techniques in large scales such as in courses and schools and postsecondary institutions, but both are being used to research and build models in several areas that can influence online learning systems in areas such as user modeling (U.S. Dept. of Ed., 2009). User modeling encompasses what a learner knows, what a learner's behavior and motivation are, what the experience is like, and how satisfied users are with online learning. Analytics can be used to detect when an online student is having academic problems and nudge her/him to address and correct the problem. Since the data is being collected in real time, multiple feedback loops operating in different times scales, continuous improvement should be possible immediately to the student prior to the next problem and daily to the teacher for the next day's teaching, monthly to the principal for judging progress, and annually to the district and state administrators for overall school improvement (U.S. Dept. of Ed., 2009). The focus on "data" however requires that all involved with analytics—particularly, learning analytics—that visual data analytics closely involve humans to make sense of the data from initial pattern detection and model building to sophisticated dashboards that present data in a way that allow humans to act upon it. It follows that making visible students' learning and assessment activities opens up the possibility for students to develop skills in monitoring their own learning and to see directly how their effort improves their success (U.S. Dept. of Ed., 2009).

*Analytics and Data Mining Challenges*

The U.S. Department of Education report, though supportive of the potential of analytics and data mining for education institutions, also noted challenges. One, of course, is the costs associated with collecting and storing the data as well as the computation techniques costs, but another is the technical challenge that educational technology systems are not interoperable, so bringing together administrative data and classroom level data will be a major challenge. Attempting to integrate and combine data about student performance—online tracking, standardized tests, teacher generated tests—to form one simplified picture of what a student knows can be difficult while meeting acceptable standards for validity (U.S. Dept. of Ed., 2009).

Yuan (2013) points out that education is a complicated system and cannot be run as a business and that learning is a complex social activity and all technologies, irrespective of how advanced and innovative they may be, are not able to capture the full scope and nuanced nature of learning. He references Melanie Booth, special assistant to the Western Association of Schools and Colleges President, who has warned that analytics needs to be complemented with well guided teaching, learning, and assessment principles for otherwise, its measures may be meaningless (Yuan 2013). He also notes that ethical issues about the use, re-use, and merging of data, both public and private, is already being raised and will have to be addressed as analytics programs increase. In addressing these challenges, Yuan (2013) concludes that educators must have the knowledge, skills, and tools for using analytics in practice to make informed decisions and take action. He believes that educators and technologists, working together, can explore new tools and techniques to use data effectively to bring real changes in teaching and learning in order to transform the accountability, efficiency and relevance of education.

Finally, the 2012 NMC Horizon report states that as higher education institutions evolve in their use of learning analytics, they will need to address the issue of data privacy and determine what extent of information to share with students and other institutions.

### *Utilizing Existing Data—Implementing an Analytics Program*

Large stores of data already exist at most colleges and universities. By analyzing this data, analytics applications have the potential to provide a predictive view of upcoming challenges, both for the institution and for students. The resulting data-driven decisions can support optimal use of both economic and pedagogical resources while offering a structure for improved educational outcomes.

Jay Liebowitz (2013) concluded that analytics are needed in the education market to help insure student, faculty, and institutional success. He cites the case of a school system in Tennessee that used analytics to identify “at risk” students during their early schooling and beyond and used the data to improve their high school graduation rate from 25 percent in 2005 to 80 percent in 2012. Analytics helped them determine the right networking and support services intervention to help the at risk students succeed (Lamont, 2013). Liebowitz (2010), understanding that many educational institutions may need help in determining what needs to be done, as well as where to start when it comes to implementing analytics. He proposes three actions:

1. Instill an “Analytics IQ Culture” within the education sector. As Norms and Baer (2013) point out, the culture and behaviors (data-driven and mind-set) of institutions must change to optimize student success.

2. Gather resources (both in talent, financial, and moral commitment) to use analytics to tackle strategic issues that are at the heart of the institution. These include both student and faculty related issues.
3. Address outcome measures versus simply system and output metrics.

To assist those institutions who may feel some outside help is required, companies like Panorama Education, a startup supported by Facebook CEO Mark Zuckerberg and his wife Priscilla Chan, can help them implement an analytics system (Lunden, 2013). Zuckerberg was quoted as saying “The company is an exciting example of the way technology can help teachers, parents and students make their voices heard” (Lunden, 2013). The company has analytics expertise working with some 4,000 schools covering more than one million students. The idea behind such companies is to work with school districts to identify issues, conceive of what questions need to be asked, and how to ask them (Lunden, 2013). The approach is to work with educators to gather data, in the areas of greatest interest, by the use of easy to administer surveys conducted by the educational institution’s own personnel. When data has been gathered and organized, the analytics company, like Panorama Education, helps the educators figure out what the data means and how to use it in academic decision making.

### *Integrating Analytics with the Degree Qualification Profile*

According to Lumina officials (Hebel, 2010), the degree profile addresses, regardless of their majors and fields of study, what college graduates should know and what they should be able to do. The bottom-line, however, is that students should be able to apply what they learn, and what they learn should be measured in terms of clear outcomes. What better way to measure **and determine** what students have learned that by applying learning analytics to the available

data. Said in another way, what students can do with the learning they have acquired is called learning outcomes, which the institution should not only measure, assess, document, but should also use analytics techniques to make future academic decisions. When anyone asks the faculty and/or the institution what the value of a given degree at their institution is, the response should be in analytic terms of assessed and proven learning outcomes at each degree level, to include how each degree—Associate’s, Bachelor’s, and Master’s—in a given field, relate and reinforce learning as the levels increase. The dashboard technique used by Professor Donaldson, noted above, in which he not only used analytics techniques to assist him in monitoring and in quickly identifying at risk students, but also to communicate to the student that he/she may be in academic trouble and seek help (EDUCAUSE, 2010). The use of analytics in assessing a student’s academic program as a whole could greatly improve students’ ability to plan for the continuation of her/his careers from degree level to the next.

### *Evaluating DQP Using Analytics*

The Western Association of Schools and Colleges (WASC), the North Central Association of Colleges and Schools' Higher Learning Commission, and the Council of Independent Colleges, a private-college association, which is a regional accreditor of higher education, all plan to evaluate Lumina's proposed framework (Hebel, 2011). Perhaps, at the same time, WASC, which accredits about 160 four-year colleges (Hebel, 2011), could incorporate aspects of analytics into their advocacy of DQP and model the integration of analytics and DQP for the institutions it accredits.

*Summary and Conclusions*

There are examples of places in both K-12 and Higher Education where analytics is being used effectively to both enhance teaching and learning while, at the same time, substantiate that learning has occurred and has improved (See Professor Donaldson, page 4, and Jay Liebowitz, page 5). Analytics is being used to identify low performance students while, in near real time, helping them improve so they do not fail and do not drop out. Further, analytics can provide very complex and large quantities of data in visual graphs and terms that everyone with education issues—especially educators, parents, and politicians-- can agree upon and understand. Analytics strongly supports the national Degree Qualification Profile (DQP) effort initiated by the Lumina Foundation whose objective is to better define and demonstrate the value of a college degree. The Western Association of Schools and Colleges (WASC), which accredits the majority of schools and colleges in the western United States, supports Lumina's DQP initiative. The writing is on the wall that accreditation agencies will be looking more and more for the type of data, that analytics can provide, to show the worth and quality of academic degrees. Education has long been under demands from politicians and the public alike to address perceptions that American educational institutions are failing our students and that the value of a college/university degree is questionable in the marketplace.

Educators, at the same time, have tried to make the case that they are not only preparing students to obtain a good job but are also preparing them to be capable citizens, life-long learners, and successful adults. Educators, however, have not been very successful in combating the low test scores and declining job market statistics used by politicians,

parents, and other critics with statistics of their own to highlight those schools and colleges where students are learning and are being well prepared for the market place.

Many educators will agree that technology, such as the world-wide-web/Internet that can provide access via mobile computer capable devices to academic information and courses to anyone anytime, has changed how students learn and interact with other students and their world. It has also changed how teachers and professors impart knowledge to them and guide them in their academic efforts. In such a world with access to all types of information in every imaginable format, how can we, as a society, know what is being taught, learned, and mastered by our students? We are beginning to understand the challenge this question presents and we are also beginning to accept the obvious-- that time in the classroom and a passing grade do not necessarily produce a graduate who can be a success in the job market or in life.

We are also learning that at-risk students and dropouts need immediate, real-time intervention and that analytics can identify the problem in real time and allow that intervention to take place. There are signs that educators—both faculty and administrators—as well as our lawmakers and politicians are coming together to recognize the challenges and potential that today's technology innovations and applications present to our education system to include K-12 and Higher Education. One such sign is the U.S. Department of Education's announcement in March of this year that they will begin to consider academic programs based on what a student knows and can do rather than "seat time" in the classroom (Kamenetz, 2013). College leaders say that by focusing on what people learn, and not how or when they learn it, and by taking advantage of the latest technology, they can save students time and lower costs. Analytics anyone?

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Analytics in Education  
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### Abstract

Analytics is defined as “The use of data, statistical analysis, and explanatory and predictive models to gain insights and act on complex issues.” Review of the literature on Analytics in higher education validates that many colleges and universities have demonstrated that analytics can help significantly advance a college or university in such strategic areas as resource allocation, student success, and finance (EDUCASE Center for Applied Research, 2012). There are other areas, however, that have great potential for advancing the effectiveness of an educational institution, such as degree cost, resource optimization, and multiple administrative functions, that have not used analytics methods to enlighten educational leaders on more effective utilization.

Even in the areas where some colleges and universities have used analytics effectively, the majority of both Higher Education and K-12 institutions have not embraced analytics to aid in their strategic planning of their educational programs, teaching and learning strategies, or educational costs—both from the institution’s or student’s/parent’s points of interest. Other fields such as Science, Technology, Engineering, Medical/Health, and Business/Management are, on a large scale, actively using analytics to guide their strategic planning and decision making. Education needs to follow their example. This paper reviews the current analytics success stories at both K-12 and Higher Education institutions and addresses the potential for analytics to significantly change how these, and potentially other, institutions use available data to make critical strategic decisions about education.

## Introduction

### *What in the world is analytics?*

There is a ring of familiarity about the term “analytics” but ask anyone to define it and note the momentary pause before a response is received. Wikipedia (2013) defines it as follows: *Analytics is the discovery and communication of meaningful patterns in data. Especially valuable in areas rich with recorded information, analytics relies on the simultaneous application of statistics, computer programming, and operations research to quantify performance. It favors data visualization to communicate insight.* EDUCAUSE, a nonprofit membership association created to support those who lead, manage, and use information technology to benefit higher education defines analytics more precisely and briefly: *Analytics is the use of data, statistical analysis, and explanatory and predictive models to gain insights and act on complex issues (2010).* The New Media Consortium (NMC), in their 2012 Horizon Report stated that *the goal of analytics is to enable teachers and schools to tailor educational opportunities to each student’s level of need and ability in close-to-real time. Analytics that are used in education are increasingly being labeled learning analytics.*

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Even so, analytics is beginning to be increasingly used in education, particularly at the district and government office levels (U.S. Dept. of Ed, 2009). However, the complexity of student performance measures presents challenges when educators try to understand and use analytics to discern patterns in student performance, predict graduation likelihood, improve chances of student success, etc. For example, in a study involving districts known for strong data use, 48% of teachers had difficulty posing questions prompted by data, 36% did not comprehend given data, and 52% incorrectly interpreted data (U.S. Dept. of Ed., 2009). To combat this, some analytics tools for educators adhere to an over-the-counter data format (embedding labels, supplemental documentation, and a help system, and making key package/display and content decisions) to improve educators' understanding and use of the analytics being displayed. Analytics is also being used increasingly in higher education.

### *EDUCAUSE Analytics Findings*

EDUCAUSE, a nonprofit membership association created to support those who lead, manage, and use information technology to benefit higher education, has done some revealing research on analytics (EDUCAUSE, 2010). They cite the case of Professor Donaldson who teaches introductory chemistry at a large state university which they do not name. He uses an analytics program linked to the learning management system (LMS) that helps him monitor the progress of the more than 500 students in his lecture class by compiling and analyzing information like the number of times class notes are viewed, the frequency of contributions to the discussion board, and quiz grades (EDUCAUSE, 2010). He uses an application dashboard, from which he can see an indicator beside each student's name, reflecting the program's assessment of the likelihood that the student is on track to earn a C or better in the course. He can instantly see which student or students are at an elevated risk by a color code in which statistically, green denotes high likelihood, yellow suggests possible risk, and red indicates an elevated risk. Based on the information from his dashboard, Donaldson can then send an e-mail to notify students if they appear at risk, congratulate them for work well done, or suggest ways to get more from the class.

EDUCAUSE (2010) believes that colleges and universities can utilize the power of analytics to advance and promote such critical areas as student recruitment policies, course catalog offerings, hiring needs, and financial decisions. In a teaching and learning context, data from such sources as the learning management system, college application forms, and library records can be used to build academic analytics programs that use algorithms to construct

predictive models that can identify students at risk for not succeeding academically (*EDUCAUSE, 2010*).

### *Close-to-Real Time Analytics*

The New Media Consortium, in international community of educational technology practitioners to include hundreds of U.S. Colleges and Universities advocates using analytics in close-to-real time and by doing so enable faculty to more precisely understand students' learning needs and to tailor instruction appropriately and far more accurately and far sooner than is now possible (NMC Horizon Report, 2012). By offering information in near real time, learning analytics can support immediate adjustments, suggesting a model of curriculum that is more fluid and open to change.

### *The U.S. Department of Education Report on Data Mining and Learning Analytics*

Learning analytics, as it is currently contrasted with data mining, focuses on applying tools and techniques in large scales such as in courses and schools and postsecondary institutions, but both are being used to research and build models in several areas that can influence online learning systems in areas such as user modeling (U.S. Dept. of Ed., 2009). User modeling encompasses what a learner knows, what a learner's behavior and motivation are, what the experience is like, and how satisfied users are with online learning. Analytics can be used to detect when an online student is having academic problems and nudge her/him to address and correct the problem. Since the data is being collected in real time, multiple feedback loops operating in different times scales, continuous improvement should be possible immediately to the student prior to the next problem and daily to the teacher for the next day's teaching, monthly to the principal for judging progress, and annually to the district and state administrators for overall school improvement (U.S. Dept. of Ed., 2009). The focus on "data" however requires that all involved with analytics—particularly, learning analytics—that visual data analytics closely involve humans to make sense of the data from initial pattern detection and model building to sophisticated dashboards that present data in a way that allow humans to act upon it. It follows that making visible students' learning and assessment activities opens up the possibility for students to develop skills in monitoring their own learning and to see directly how their effort improves their success (U.S. Dept. of Ed., 2009).

### *Analytics and Data Mining Challenges*

The U.S. Department of Education report, though supportive of the potential of analytics and data mining for education institutions, also noted challenges. One, of course, is the costs associated with collecting and storing the data as well as the computation techniques costs, but another is the technical challenge that educational technology systems are not interoperable, so bringing together administrative data and classroom level data will be a major challenge. Attempting to integrate and combine data about student performance—online tracking, standardized tests, teacher generated tests—to form one simplified picture of what a student knows can be difficult while meeting acceptable standards for validity (U.S. Dept. of Ed., 2009).

Yuan (2013) points out that education is a complicated system and cannot be run as a business and that learning is a complex social activity and all technologies, irrespective of how advanced and innovative they may be, are not able to capture the full scope and nuanced nature of learning. He references Melanie Booth, special assistant to the Western Association of Schools and Colleges President, who has warned that analytics needs to be complemented with well guided teaching, learning, and assessment principles for otherwise, its measures may be meaningless (Yuan 2013). He also notes that ethical issues about the use, re-use, and merging of data, both public and private, is already being raised and will have to be addressed as analytics programs increase. In addressing these challenges, Yuan (2013) concludes that educators must have the knowledge, skills, and tools for using analytics in practice to make informed decisions and take action. He believes that educators and technologists, working together, can explore new tools and techniques to use data effectively to bring real changes in teaching and learning in order to transform the accountability, efficiency and relevance of education.

Finally, the 2012 NMC Horizon report states that as higher education institutions evolve in their use of learning analytics, they will need to address the issue of data privacy and determine what extent of information to share with students and other institutions.

#### *Utilizing Existing Data—Implementing an Analytics Program*

Large stores of data already exist at most colleges and universities. By analyzing this data, analytics applications have the potential to provide a predictive view of upcoming challenges, both for the institution and for students. The resulting data-driven decisions can support optimal use of both economic and pedagogical resources while offering a structure for improved educational outcomes.

Jay Liebowitz (2013) concluded that analytics are needed in the education market to help insure student, faculty, and institutional success. He cites the case of a school system in Tennessee that used analytics to identify “at risk” students during their early schooling and beyond and used the data to improve their high school graduation rate from 25 percent in 2005 to 80 percent in 2012. Analytics helped them determine the right networking and support services intervention to help the at risk students succeed (Lamont, 2013). Liebowitz (2010), understanding that many educational institutions may need help in determining what needs to be done, as well as where to start when it comes to implementing analytics. He proposes three actions:

1. Instill an “Analytics IQ Culture” within the education sector. As Norms and Baer (2013) point out, the culture and behaviors (data-driven and mind-set) of institutions must change to optimize student success.
2. Gather resources (both in talent, financial, and moral commitment) to use analytics to tackle strategic issues that are at the heart of the institution. These include both student and faculty related issues.
3. Address outcome measures versus simply system and output metrics.

To assist those institutions who may feel some outside help is required, companies like Panorama Education, a startup supported by Facebook CEO Mark Zuckerberg and his wife Priscilla Chan, can help them implement an analytics system (Lunden, 2013). Zuckerberg was quoted as saying “The company is an exciting example of the way technology can help teachers,

parents and students make their voices heard” (Lunden, 2013). The company has analytics expertise working with some 4,000 schools covering more than one million students. The idea behind such companies is to work with school districts to identify issues, conceive of what questions need to be asked, and how to ask them (Lunden, 2013). The approach is to work with educators to gather data, in the areas of greatest interest, by the use of easy to administer surveys conducted by the educational institution’s own personnel. When data has been gathered and organized, the analytics company, like Panorama Education, helps the educators figure out what the data means and how to use it in academic decision making.

### *Integrating Analytics with the Degree Qualification Profile*

According to Lumina officials (Hebel, 2010), the degree profile addresses, regardless of their majors and fields of study, what college graduates should know and what they should be able to do. The bottom-line, however, is that students should be able to apply what they learn, and what they learn should be measured in terms of clear outcomes. What better way to measure **and determine** what students have learned than by applying learning analytics to the available data. Said in another way, what students can do with the learning they have acquired is called learning outcomes, which the institution should not only measure, assess, document, but should also use analytics techniques to make future academic decisions. When anyone asks the faculty and/or the institution what the value of a given degree at their institution is, the response should be in analytic terms of assessed and proven learning outcomes at each degree level, to include how each degree—Associate’s, Bachelor’s, and Master’s—in a given field, relate and reinforce learning as the levels increase. The dashboard technique used by Professor Donaldson, noted above, in which he not only used analytics techniques to assist him in monitoring and in quickly identifying at risk students, but also to communicate to the student that he/she may be in academic trouble and seek help (EDUCAUSE, 2010). The use of analytics in assessing a student’s academic program as a whole could greatly improve students’ ability to plan for the continuation of her/his careers from degree level to the next.

### *Evaluating DQP Using Analytics*

The Western Association of Schools and Colleges (WASC), the North Central Association of Colleges and Schools' Higher Learning Commission, and the Council of Independent Colleges, a private-college association, which is a regional accreditor of higher education, all plan to evaluate Lumina's proposed framework (Hebel, 2011). Perhaps, at the same time, WASC, which accredits about 160 four-year colleges (Hebel, 2011), could incorporate aspects of analytics into their advocacy of DQP and model the integration of analytics and DQP for the institutions it accredits.

### *Summary and Conclusions*

There are examples of places in both K-12 and Higher Education where analytics is being used effectively to both enhance teaching and learning while, at the same time, substantiate that learning has occurred and has improved (See Professor Donaldson, page 4, and Jay Liebowitz, page 5). Analytics is being used to identify low performance students while, in near real time, helping them improve so they do not fail and do not drop out. Further, analytics can provide very complex and large quantities of data in visual graphs and

terms that everyone with education issues—especially educators, parents, and politicians-- can agree upon and understand. Analytics strongly supports the national Degree Qualification Profile (DQP) effort initiated by the Lumina Foundation whose objective is to better define and demonstrate the value of a college degree. The Western Association of Schools and Colleges (WASC), which accredits the majority of schools and colleges in the western United States, supports Lumina's DQP initiative. The writing is on the wall that accreditation agencies will be looking more and more for the type of data, that analytics can provide, to show the worth and quality of academic degrees. Education has long been under demands from politicians and the public alike to address perceptions that American educational institutions are failing our students and that the value of a college/university degree is questionable in the marketplace.

Educators, at the same time, have tried to make the case that they are not only preparing students to obtain a good job but are also preparing them to be capable citizens, life-long learners, and successful adults. Educators, however, have not been very successful in combating the low test scores and declining job market statistics used by politicians, parents, and other critics with statistics of their own to highlight those schools and colleges where students are learning and are being well prepared for the market place.

Many educators will agree that technology, such as the world-wide-web/Internet that can provide access via mobile computer capable devices to academic information and courses to anyone anytime, has changed how students learn and interact with other students and their world. It has also changed how teachers and professors impart knowledge to them and guide them in their academic efforts. In such a world with access to all types of information in every imaginable format, how can we, as a society, know what is being taught, learned, and mastered by our students? We are beginning to understand the challenge this question presents and we are also beginning to accept the obvious-- that time in the classroom and a passing grade do not necessarily produce a graduate who can be a success in the job market or in life.

We are also learning that at-risk students and dropouts need immediate, real-time intervention and that analytics can identify the problem in real time and allow that intervention to take place. There are signs that educators—both faculty and administrators—as well as our lawmakers and politicians are coming together to recognize the challenges and potential that today's technology innovations and applications present to our education system to include K-12 and Higher Education. One such sign is the U.S. Department of Education's announcement in March of this year that they will begin to consider academic programs based on what a student knows and can do rather than "seat time" in the classroom (Kamenetz, 2013). College leaders say that by focusing on what people learn, and not how or when they learn it, and by taking advantage of the latest technology, they can save students time and lower costs. Analytics anyone?

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EXAMINING THE DURABILITY OF ENVIRONMENTAL EDUCATION SELF-EFFICACY BELIEFS  
IN PRESERVICE TEACHING

**Title of the submission**

Examining the Durability of Environmental Education Self-Efficacy Beliefs In Preservice Teaching

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**Abstract**

This research examined the outcome of a year two intervention which aligned two instructional contexts, to impact preservice teachers' Environmental Education (EE) self-efficacy beliefs and their use of inquiry-based instruction. The intervention immersed candidates in inquiry-based pedagogies and EE content across a science content course and a general methods course. It was found that the teacher candidates' EE self-efficacy beliefs increased over the first half of the intervention and then decreased towards the end. The analysis of 14 units of instruction showed a lack of certain inquiry-based elements across all units. Practical and theoretical implications are considered.

*Keywords:* environmental education, self-efficacy, inquiry-based instruction

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### ***Introduction***

History records a worldwide interest in environmental issues dating back to the 1940s. However, it was not until the 1960s that environmentally focused legislation was passed to address such issues (Carter and Simmons, 2010). By the 1970s the National Science Teachers Association put forward a call to address environmental literacy in the school curriculum. Further impetus supporting EE curricula standards came about as a result of the 1983 *A Nation at Risk* report, and as a result, environmental education (EE) standards were developed by the North American Association for Environmental Education (NAAEE).

To facilitate the development of environmental literacy in K-12 education, McDonald and Dominguez (2010) argued for purposeful integration of EE methods and skills into teacher preparation programs. While there is no one way to teach EE, there are many purposeful approaches that can be taught to teacher education candidates. These approaches are often mediated by a variety of factors including teacher training and disposition, student disposition, curricular goals, available resources and time for instruction (Winther, Sadler and Saunders, 2010). Favored in teacher education preparation programs are methods that use inquiry-based techniques which view preservice teachers as learners, reflect pedagogical content knowledge (PCK), actively engage and model appropriate content pedagogies (Bell, 2003) and impart engaging activities in classrooms. Finally, approaches that include training with EE project curricula and those that reach across subject area departments are also encouraged in order to move preservice teachers from EE learners to EE teachers.

### Teacher Self-Efficacy Beliefs

A strong determinant of future instruction behavior is the teachers' self-efficacy beliefs (Bandura, 1997; Pajares, 1996). In his theory of social learning, Bandura (1977) first defined

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*personal efficacy* and *outcome expectancy* as two components of self-efficacy. *Personal efficacy* refers to the belief that an individual can successfully perform a particular action or behavior, while an *outcome expectancy* refers to an individual's estimate that a given behavior will lead to certain outcomes. Self-efficacy tends to be a domain specific belief rather than a global or domain general belief (Bandura, 1986, 1997). Stronger self-efficacy beliefs allow for higher goal setting and committed actions toward the goal (Bandura 1993, 1989; Pajares, 1996). These beliefs can be developed through one's mastery experiences, the vicarious experiences of others, the social persuasion of others and one's emotional state while engaged in behavior (Bandura, 1986). Given that self-efficacy beliefs often mitigate one's motivation to act in as well as on particular domains or contexts (Pajares, 1996), we focus on the preservice elementary teachers' environmental education efficacy beliefs in this research.

According to Bandura (1989, 1993), perceived control of the environment is another important aspect of efficacy beliefs. Those with stronger efficacy beliefs find ways to exercise control over the selection, construction and behaviors exhibited in environments, thus limiting the inherent constraints contained therein. The interplay of self beliefs, behavior and environments is what Bandura (1983) referred to as triadic reciprocity involving the sequentiality of mutual influence (Bandura, 1983, p.167). In later work, he stated that, "It is important to understand how certain determinants produce change in the first place regardless of how the resultant changes, in turn, affect the subsequent operation of the determinants. (Bandura, 1993, p. 168)." With this suggestion, the remaining discussion will focus on the interplay between the EE self-efficacy (i.e., personal attributes) and EE instruction (i.e., behaviors). In this study, the instructional context (i.e., environment) will serve to inform the relationship between these two determinants.

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### *Inquiry-Based Instruction*

Domain general pedagogies are insufficient instructional experiences for preservice teachers (Lee, Hart, Cuevas & Enders, 2004). Instead, content-specific pedagogies and inquiry-based instruction are needed to develop mathematical and science understandings. In science, inquiry refers to the diverse ways in which scientists study the natural world and propose explanations based on observations or evidence (NRC, 1996). At classroom level, inquiry refers to the activities of students in which they develop scientific understandings and abilities to do science. According to the most recently released framework for K-12 science education, students should be engaged in the following practices in science classrooms: 1) asking questions; 2) developing and using models; 3) planning and carrying out investigations; 4) analyzing and interpreting data; 5) using mathematics and computational thinking; 6) constructing explanations; 7) engaging in argument from evidence; and 8) obtaining, evaluating, and communicating information (NRC, 2012, p. 42).

Inquiry-based instruction has been established as an important aspect of mathematics and science student learning. In addition, inquiry-based pedagogical techniques have been found to be major factors influencing elementary preservice teachers' self-efficacy and outcome expectancy expectations (e.g., Narayan & Lamp, 2010). Furthermore, changes in self-efficacy were found to be positively correlated with changes in the use of inquiry-based instructional practice among elementary and middle school science teachers (Lakshmanan, Heath, Perlmutter, & Elder, 2011). However, students might not benefit from inquiry learning experiences uniformly. In Avery and Meyer's study (2012), for instance, it was found that one group of teacher candidates improved their outlook on science teaching while the other group worsened after the intervention. Given the established connection between inquiry-based instruction and

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efficacy beliefs, the research will focus on an attempt to increase in preservice elementary teachers' environmental education efficacy beliefs and proliferate inquiry-based practices.

In this study, there are two instructional contexts in which self-efficacy beliefs were measured. The Environmental Education Intervention (EEI), coined by the researchers was the latest phase of program reform meant to better align key courses in a teacher education program, in order to increase preservice teacher self-efficacy beliefs and use of inquiry based practices in K-8 settings.

### *Instructional Contexts: The Environmental Education Intervention (EEI)*

The EEI consisted of two courses implemented over a two year period. The first was a sophomore level course, entitled Investigations in Mathematics and Science (IMS II). It was designed to replace traditional science lecture based classes (e.g., biology) for elementary level teacher certification. Co-designed and co-taught by content area and education faculty, the course used inquiry-based instruction to teach key science concepts. The second course was entitled Managing the Teaching and Learning Environment (MTLE). It incorporated general methods, technology integration, assessment and a field experience. It was co-taught by education faculty.

Utilizing the literature base on best practices, the EEI was designed to (a) familiarize preservice teachers with the scope and substance of EE standards; (b) expose preservice teachers to EE content, appropriate EE pedagogy and available EE resources; and (c) support the design of lessons which would address EE standards for K-8 students. The alignment actions included the addition of the following learning experiences across the two courses (see Table 1):

IMS II was designed to help candidates develop (a) fundamental understanding of integrated mathematics and science content including EE; and (b) skills in critical thinking and

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scientific inquiry. The course required collaborative work in which candidates defined questions, designed and carried out investigations using available resources and appropriate apparatus and techniques to collect and analyze data, communicate scientific procedures and explain findings in oral and written form.

The MTLE course revisited the EE standards, namely Agriculture and Society; Integrated Pest Management; and Threatened, Endangered and Extinct Species. Preservice teachers were provided with EE related resources, including a daylong workshop on the state level EE standards and a supplemental EE curricular program entitled, "Food, Land and People." Finally, during the lesson planning portion of the course, preservice teachers were directed to find ways to address the EE standards in their unit planning and subsequent classroom instruction.

During the field experience, preservice teachers were strongly encouraged, but not required to design and implement a unit in accordance with the EE standards. The unit of instruction was expected to (a) address a core concept and several essential questions, (b) utilize developmentally appropriate pedagogies, and (c) align standards and objectives with instructional activities and assessments. The MTLE course exposed preservice teachers to both general and specific pedagogies. While, EE standards were offered as a framework through which the preservice teachers would explore various science pedagogies, they were also expected to use graphic organizers, visuals, elaborative rehearsal techniques, etc., based on the Information Processing Model, to teach both declarative and procedural knowledge.

### *Research Questions*

Over the two year intervention, the researchers expected preservice teachers to develop greater EE self-efficacy beliefs as a function of the instructional activities and environments that they encountered. The researchers also expected that as preservice teachers became more

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efficacious, they would choose to incorporate EE content and pedagogy into their planning and instruction. The questions to be addressed include: (a) Do preservice teachers EE self-efficacy beliefs increase across the intervention? and (b) To what extent do the preservice teachers transfer their own inquiry learning experiences to their unit lesson planning in the MTLE course?

### ***Methods: A Mixed Methods Design***

This study uses both qualitative and quantitative evidence to inform practice and thus fits the description of a mixed methods approach. The mixed methods approach is touted to be problem-centered and application-based (Creswell, 2002). The researchers felt this approach was aligned with the needs of the study as they sought to promote EE self-efficacy beliefs and EE focused and inquiry-based instructional practice.

The Environmental Education Efficacy and Beliefs Instrument (EEEBI), which consists of the Personal Environmental Teaching Efficacy (PETE) and Environmental Teaching Outcome Expectancy (ETOE), was administered as a pre-post measure. The scale was administered on three occasions, at the start and end of the sophomore year IMS II course as well as the end of the junior year MTLE course. The candidates (N=35) completed the EEEBI on all three occasions.

The EEEBI was first adapted from the Science Teaching Efficacy Belief Instrument (STEBI-B) (Enochs & Riggs, 1990), by replacing “science” with “environmental education” (Sia, 1992). It has been used in more recent EE research studies (e.g., Moseley, Reinke, & Bookout, 2002; Moseley, Huss, & Utley, 2010). This 23-item instrument required students to respond to each question with a five-point Likert Scale (strongly disagree = 1 to strongly agree = 5). There are two sub-scales in the EE teaching efficacy instrument: Personal Environmental

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Teaching Efficacy (PETE) and Environmental Teaching Outcome Expectancy (ETOE). The reliability coefficients ( $\alpha$ ) for the PETE were 0.8-0.92 and 0.7-0.75 for the ETOE subscales.

In addition, the units of instruction were analyzed using constant comparative methods (Creswell, 2002; Strauss & Corbin, 1994). Open coding was used to extract relevant information from each unit. In addition, selective coding was used to determine the occurrences of EE –focused content and inquiry-based elements. The units (N=14) information collected included (1) name and grade identifiers (2) the unit title (3) the unit topic (4) the standards (5) the lesson objectives, and (6) the lesson activities. Once the information was extracted from the units, it was analyzed to note the manner and frequency with which the units addressed three PA EE standards, namely Threatened and Endangered Species (TEES), Agriculture and Society (AS), and Integrated Pest Management (IMP). In addition, the researchers looked for instances of inquiry--based instruction. The eight elements of inquiry were adopted from practices considered essential for K-12 Science curriculum in the new framework for K-12 science education (NRC, 2012, p 42).

The first author (Richardson) gathered and categorized the unit information in an MS Excel database. In order to validate the information extracted from the units, the second author (Liang) provided a confirmatory analysis of the database categories and content, to include the EE standards addressed for each unit as well as the inquiry elements presented in each unit. In addition, the two authors independently coded the lessons from a common unit, with numbers 1 through 8. The numbers corresponded to each of the eight elements of inquiry. The two authors convened to resolve any coding discrepancies and to establish independent rater agreement. Finally, the first author proceeded to code the remaining units.

***Results***

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### *Preservice Teacher EE Self-Efficacy Beliefs*

The EEEBI was administered on three occasions: prior to the integrated Math and Science content course during the sophomore year, after the IMS course, and after the methods course during the junior year. To determine the within-subject differences between the pre and the post tests, repeated measures MANOVAs were performed on the two subscales using the PASW Statistics 18.

The repeated measures ANOVA analyses results are presented in Table 2. There were statistically significant changes ( $p < 0.01$ ) on the Personal Environmental Teaching Efficacy data subset over time. Pair wise comparisons further revealed a statistically significant improvement (at  $p = 0.002$ ) on the PETE sub-scores over the IMS content course while revealing a significant decline over the methods course ( $p = 0.003$ ). No statistically significant changes were found on the Environmental Teaching Outcome Expectancy subscores over time (see Table 2 & Figure 1)

### *Instructional Unit Content*

The units of instruction were analyzed. While ten of the units focused on science content, three units addressed social studies topics and one unit was dedicated to mathematics. The science units were further classified according to their EE standard focus. It was determined that seven of the 10 science units focused on one or more of the three predetermined EE standards, Threatened and Endangered Species (TEES), Agriculture and Society (AS), and Integrated Pest Management (IMP). Specifically five units addressed TEES. One unit focused on TEES and AS. Finally, one unit covered IMP.

The seven EE focused units spanned 1<sup>st</sup> through 8<sup>th</sup> grades. Specifically there was one 1<sup>st</sup>, two 5<sup>th</sup>, two 6<sup>th</sup> and one 8<sup>th</sup> grade units. When each lesson was reviewed for inquiry elements, one of the units showed no evidence of inquiry instruction. It was excluded from

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further analysis. The remaining 6 units or 43% of all units reviewed exhibited one or more elements of inquiry instruction. Across the 6 units, 61 lesson segments were analyzed. Lessons segments per unit ranged from 6 to 14.

The frequency with which each of the eight inquiry elements occurred across all lessons was also noted in Figure 2. Obtaining, evaluating and communicating information was the element identified most often (n=15) while constructing explanations and engaging in argument from evidence were each identified slightly less often (n=11). To the contrary, using mathematics and computational thinking (n=1) along with planning and carrying out investigations (n=2) were noted least often. Sample of inquiry elements from various lessons are noted in Table 3.

### **Discussion**

The research findings were mixed. While there was a rise in preservice teacher EE self-efficacy beliefs in year one of the intervention, the increase was not sustained in year two, as the data reflected a return to their initial efficacy levels prior to the IMS II course.

It appeared that the IMS II, an inquiry-based integrated science (including EE) content course, appeared to have a greater impact on participant EE teacher self-efficacy beliefs than the MTLE course. This result is consistent with what has been reported in the literature (Narayan & Lamp, 2010; Richardson and Liang, 2008).

At a unit level of analysis, 50% of the units addressed the predetermined EE standards. In addition, 43% of the units addressed one or more inquiry- elements. To the contrary, at the lesson level, the average number of identified inquiry- elements peaked at 21%. Furthermore, the distribution of elements addressed across any one lesson was uneven. Specifically, there were certain inquiry elements that received little attention, while others were cited more often.

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In most cases, the EE-themed units primarily focused on knowledge acquisition rather than knowledge construction types of activities.

What then mitigated the drop in EE self-efficacy beliefs and the lack of EE focused inquiry-based instruction? The answer may be the instructional environment. According to Bandura's model of triadic reciprocity (Bandura, 1983), the environment, personal beliefs and behavior, "[they] involve sequentiality of mutual influence (p.167). Previous research (Liang and Richardson, 2008) supports that assertion that the IMS II course provided an environment conducive for EE self-efficacy development, due to its EE infused inquiry-based instruction, as self efficacy is best developed within specific domains (Bandura, 1986, 1997; Pajares, 1997).

During the IMS course preservice teachers were explicitly taught EE related content through inquiry-based instruction. They also participated in problem-based learning by conducting a stream study at a local arboretum. Throughout the course they were actively engaged in collaborative investigations around EE standards. Finally, they were also exposed to innumerable EE informational and curricular resources as part of the overall learning process. Gunning and Mensah (2011), in their research with preservice teachers of science, has determined the instructional environment as critical to increasing teacher self-efficacy to teach science.

The converse appears to be true regarding the MTLE methods course. At first glance, the list of activities seems more than sufficient to support preservice teacher EE self-efficacy development and subsequent EE-focused and inquiry-based instruction. In hindsight, the reasons for regression of EE self-efficacy may be attributed to domain general nature of the MTLE instructional environment.

## EXAMINING THE DURABILITY OF ENVIRONMENTAL EDUCATION SELF-EFFICACY BELIEFS IN PRESERVICE TEACHING

As stated earlier, preservice teachers were reintroduced to a shared repository of EE resources established as part of the EEI. The MTLE course focused more on universal models of unit development and lesson planning with considerable attention given to classroom management, technology integration, and student assessment. The Information Process Theory (IPT) was the overarching pedagogical framework for the course. Preservice teachers were encouraged to access students' prior knowledge, utilize graphic organizers, conduct demonstrations and simulations, plan projects, engage in elaborative rehearsal, pose questions, and offer feedback, in order to foster student encoding and information retention.

Once the lesson plan content was analyzed to determine the frequency and manner in which preservice teachers addressed EE standards, it became clear that the preservice teachers' pedagogical choices were very much situated by the MTLE course. Specifically, regardless of the content presented in the lessons, the units employed the instructional strategies emphasized by the MTLE course rather than those emphasized by the IMS II course, suggesting a lack of automatic transfer of inquiry learning experiences in the IMS into the MTLE course context.

Beyond the data analysis, researchers speculated that the preservice teachers encountered competing priorities, set forth by the IMS course, the MTLE course, the cooperating teacher in those local schools. The cooperating teachers often dictated the content of the units. The researchers felt they could not require implementation of EE content due to the needs and wishes of the cooperating teachers hosting the preservice candidates. Although the MTLE instructor negotiated the field experience with the school teachers to facilitate EE adoption, researchers recognized that the teachers may not allow candidates to include EE content in their classes for any number of reasons.

## EXAMINING THE DURABILITY OF ENVIRONMENTAL EDUCATION SELF-EFFICACY BELIEFS IN PRESERVICE TEACHING

Furthermore, if a preservice teacher team was not approved to teach an EE topic by the cooperating teacher, the MTLE instructor allowed the teams to opt out of an EE-themed unit. Bandura suggests that perceived environmental constraint can mediate beliefs and behaviors (Bandura, 1983). In this case, the preservice teachers may have encountered environmental constraints that seemed insurmountable, thus choosing to persist less in conducting EE-focused and inquiry-based instruction.

The research indicates that aligning preservice teacher courses to meet mutual goals is a useful programmatic paradigm. Doing so will encourage the integration of various lesson planning models into a larger conceptual framework, thus assuring that preservice teachers have a flexible rather than a situated view of lesson planning across instructional contexts. In addition, a more unified set of priorities needs to be negotiated among the stakeholders. Certainly, more should be done to make certain preservice teachers are able to exercise their options to create EE-focused inquiry-based units in their field placements.

### **Limitations**

The EEI offers a viable medium for the explicit development of EE self-efficacy beliefs and EE-focused inquiry-based practices for preservice teachers. It unites two formerly disparate courses, within a teacher training program, to prepare teachers for quality science and mathematics instruction. Finally, for preservice teachers the EEI illuminates the relationship between course knowledge and subsequent classroom instruction (i.e., praxis). Despite the progress that has been made, the research represents work in progress. The analysis of data has provided the researchers with valuable insights, but no definitive proof of the intervention's effectiveness in raising self-efficacy beliefs or shaping teacher behaviors. The work described here represents a macro-analysis of the initial implementation of the intervention. Previous

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research by the authors has explored the impact of the IMS course sequence. This is the first attempt to look across the entire intervention (IMS II and MTLE). Certainly, as the intervention evolves and its implementation activities are solidified, causal links between beliefs and practices can be explored and substantiated.

As it has been stated that instructional context is an important determinant, it would be helpful to conduct a micro analysis of preservice teacher efficacy beliefs as the courses progress to determine at what point the critical shift in beliefs occurred during the intervention. Also, it would be wise to chart student's perceptions of the various instructional contexts might support or hinder the practice of EE focused and inquiry-based instruction.

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EXAMINING THE DURABILITY OF ENVIRONMENTAL EDUCATION SELF-EFFICACY BELIEFS  
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Table 1. List and Location of EEI Activities

Activities	IMS II	MTLE
a stream study project at a local arboretum;	X	
shared EE resources, websites, curriculum materials and informational text;	X	X
instruction on EE content standards;	X	X
a daylong workshop on PA EE standards, resources and curricular materials entitled, "Food, Land and People;" and		X
EE focused unit planning and implementation for K-8 classrooms.		X

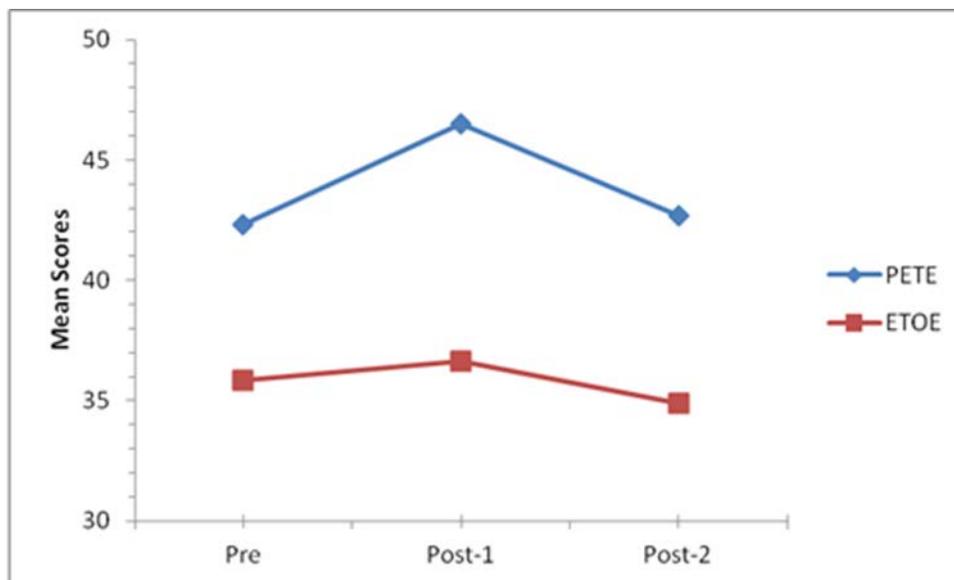
Table 2. *Repeated Measures Analysis of Variance on EEEBI*

Source	<i>df</i>	F	Partial Eta Squared
Personal Environmental Teaching Efficacy (PETE)			
Time	2	8.49**	.31
Error	38	(12.66)	
Environmental Teaching Outcome Expectancy (ETOE)			
Time	2	2.07	.098
Error	38	(7.40)	

*Note.* Values enclosed in parentheses represent mean square errors. \*\* $p < .01$ , two-tailed. Effect Size= Partial Eta Squared.

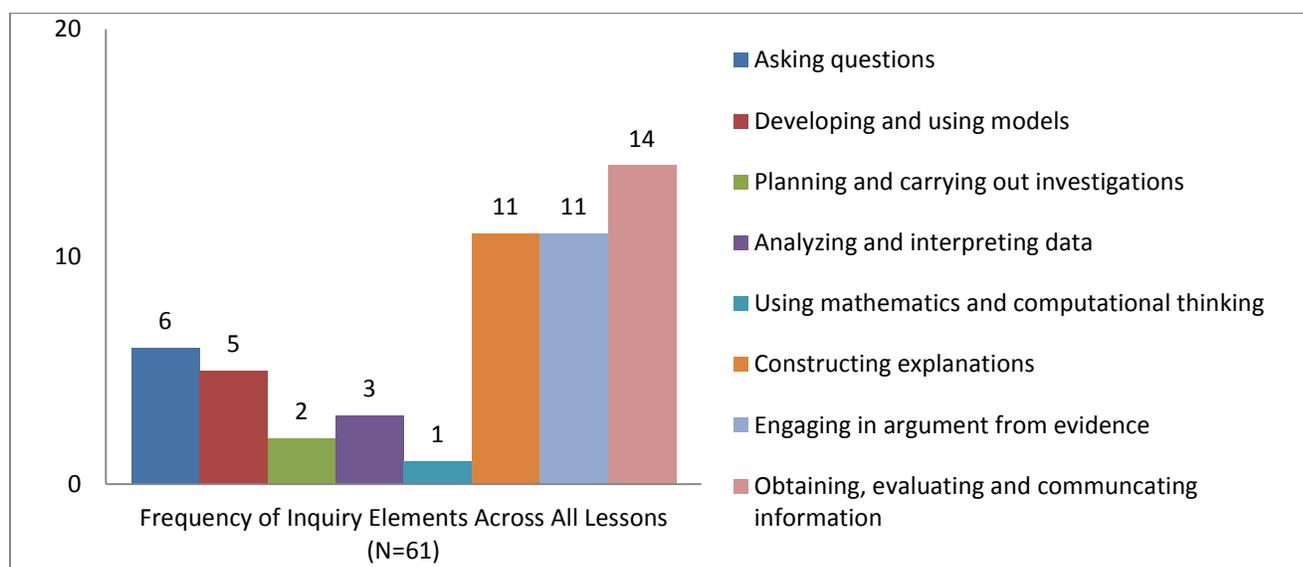
EXAMINING THE DURABILITY OF ENVIRONMENTAL EDUCATION SELF-EFFICACY BELIEFS  
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Figure 1. Mean Scores on the two EEEBI Sub-Scales (PETE and ETOE) on Three Occasions



Note: PETE -- Personal Environmental Teaching Efficacy; ETOE -- Environmental Teaching Outcome Expectancy. N=20

Figure 2. Frequency of Inquiry Elements Across All Lessons



EXAMINING THE DURABILITY OF ENVIRONMENTAL EDUCATION SELF-EFFICACY BELIEFS  
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Table 3. Samples of Inquiry Elements Across All Lessons

Inquiry Elements	Lesson Descriptions
1. Asking questions	DL/GA-L1*-Students observe plants and discuss what will happen to them (KWL). Students make predictions and plant seeds.
2. Developing and using models	SH/JG-L3-Teacher presents map features. Paired students will create a model landscape with sand and water. Students create a stream map with copies, etc. from an actual location.
3. Planning and carrying out investigations	JB/MQ-L4-Students do centers, Audio directions for experiment and complete worksheet, Graph longitude/latitude of locales in tundra, Memory game on facts, Internet research on facts and worksheet. Add to suitcase.
4. Analyzing and interpreting data	SP/KG-L9-Students view a map of the MA colonies. Students review and make predictions on rice crops.
5. Using mathematics and computational thinking	DL/GA-L6-Students record seed growth and respond to questions and complete the KWL chart.
6. Constructing explanations	SH/JG-L5-Students work on their webquest and create information posters on climates.
7. Engaging in argument from evidence	KG/KF-L7-Given an envelope of natural pesticides. Read article on PM with questions posed by teacher. In pairs, read excerpts and then create their own natural pesticide (on paper) and label their bottle. Share their bottles with the class. Play Pest Trivia game. Journal on what they learned.
8. Obtaining, evaluating and communicating information	KB/AD-L-7-In groups, students complete a worksheet on facts they reviewed as a whole class. Students construct a diorama of animal in environment.

*Note:* \*Student Team Initials -Lesson Number

**Abstract**

Living la vida loca: How the life experiences of seven young Mexican women impacted their decision to drop out of high school, graduate, and/or pursue a higher education

This project examined the life experiences of seven young Mexican women and the impact these experiences may have had on the decisions they made about their schooling. The study explored various factors as possible reasons for dropping out, including family and cultural influences, school and social influences, and personal motivation and self-esteem. Qualitative methodology was used in creating case studies of the seven participants. Each young woman was between the ages of 18 and 20 and had attended school at least through the ninth grade. Data collection methods included in-depth interviews with the participants and their parents, as well as review of their cumulative school files. Results indicated that the challenges these young women faced growing up created a sense of "craziness" that forced them to make choices about their futures, including their schooling. In some cases, school contributed to the craziness and they had to choose between managing their personal responsibilities or completing their high school education. Recommendations for schools include creating an environment in which all students can reach their fullest potential by having more options to choose from, such as a flexible school schedule and having the ability to take on more ownership of course selection that directly applies to their area of interest, even if it is a non college-bound focus. Schools also must ensure their environment is respectful of students and empathetic to each individual circumstance as well as culturally responsive to the wide-range of diversity within the student population.

# THE SAT, TUTORING, AND EQUITY

Iris C. Rotberg

## Abstract

For decades, the SAT has been critiqued because of the inherent advantage that affluent students have in taking the test. In recent years, however, the inequities have compounded as children from affluent families take intensive private tutoring for the SAT, sometimes at a cost of many thousands of dollars. This is well beyond the SAT cram courses that their parents' generation took. It means that children from low-income families and, increasingly, children from middle-income families cannot begin to afford the tutoring that affluent parents routinely provide to their children. Intensive tutoring frequently raises SAT scores by 200 to 300 points, a gain that provides a substantial advantage in competing for college admission and for academic scholarships. That is why tutors can charge over a hundred dollars an hour for their services. Moreover, affluent parents increasingly buy tutors even for children who initially score very high to give them the few extra points that will increase their chances of admission to the most prestigious schools.

There is a lot of hand-wringing by higher education officials about the widening socioeconomic divide in higher education, with children of the rich concentrated in elite schools while children from lower-income families increasingly attend community colleges. Eliminating the SAT clearly would not solve the basic societal problems that lead to the polarization—increasing poverty rates, growing gaps in income and wealth, and the rising costs of higher education. But it would be an easy fix to eliminate at least one significant factor, the SAT. And colleges and universities would lose nothing of value. They now gain little information from the test scores because the comparisons between students have become virtually meaningless.

The paper elaborates on these points and provides data on the broader social and educational context as well as on the costs of tutoring and the distribution of test-score gains.

## HICE 2014 Proceedings Submission

1. **Title of Submission:** Teaching for Transfer: Critical Discussion of a Psychological Skills Training Workshop Series for a Freshman College Population

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6. **Abstract:** (please see next page)

## **Teaching for Transfer: Critical Discussion of a Psychological Skills**

### **Abstract**

Educational psychologists (e.g., Klausmeier, 1966; Resnick, 1987) have long supported the notion that one of the major goals of formal education is to develop life skills that are applicable to the 'real world'. Recently, the National Research Council (NRC, 2012) advanced a comprehensive call for greater and more explicit emphasis on the teaching of 'life skills' (a.k.a., '21<sup>st</sup> Century Skills') in the schools. This call not only implored educators to incorporate life skills into school curricula, but, also to 'teach for transfer'; teach various life skills in a deliberate manner such that cognitive transfer is made possible. Transfer is often described as the ability to adapt something that one has already learned in one situation (e.g., learning math at school) to a new situation (e.g., calculating sales taxes on a purchase; Robins, 1996). Psychological skills are specific cognitive strategies (e.g., goal setting, imagery, self-talk, etc.) taught to athletes and other performers that are intended to: enhance performance (e.g., Weinberg & Gould, 2003), increase motivation (e.g., Harwood, Cumming, & Fletcher, 2004), increase perceptions of enjoyment (e.g., Jackson, Thomas, Marsh, & Smethurst, 2001), and, increase self-satisfaction (e.g., Locke, 1996). It would seem reasonable to believe that 'teaching for transfer' of psychological skills may result in positive effects on human performance and experience across various life performance domains (e.g., academics, sport, social relationships, work, etc.). Thus, the general purpose of the current research was to examine the nature and extent of the transfer of psychological skills within and between performance domains in a freshman college population. The focus of this panel session is conceptual: Researchers will present the theoretical and research-based underpinnings of the design of the workshop series, discuss population-specific moderators of the design, and overview delivery methods and preliminary results. The

unique challenges of designing psychological skills workshops for a college freshman population will also be discussed.

Keywords: Cognitive transfer; Teaching for transfer; Psychological skills training

(831)

### **Dietetics Education in Korea: What the Future Should Hold?**

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The roles and capacity expected for dietitians have been expanded as the dietitians' career path has been diversified during the last decade. To assess if dietetics education in Korea meets such societal needs, the curricula of dietetics education in Korea were analyzed, focusing on the emerging trend. The curricula were collected from a total of 74 universities via the respective university homepages. The grouping was made with the subjects excluding those mandated by law and resulted in five major categories of new subjects: functional foods, food management, practicum/internship, restaurant management, and exercise/weight management. The subjects regarding food culture, nutrition communication, and food coordination were being offered in a few universities. In addition, the curricula in dietetics education were compared among Korea, U.S.A. and Japan. The features of dietetics education in U.S.A. and Japan, distinguished from that in Korea, were extracted although there was some limitation in direct comparison due to the different education and credential systems among the countries. It is suggested that dietetics education in Korea should be re-engineered to more actively accommodate societal needs and some futuristic aspects of the dietetics education in U.S.A. and Japan should be benchmarked.

## Demographic Differences in Knowledge about HPV at a Rural University

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## Demographic Differences in Knowledge about HPV at a Rural University

### Introduction:

As the most common STD in the United States, Human Papillomavirus (HPV) can lead to devastating health consequences such as infertility, cancer, and mortality. These negative health consequences are preventable with the HPV vaccine. Knowledge of the sexual health risk and the vaccine is not universal among the age group targeted for the vaccine. Rural areas have been found to have poorer health behavior and health outcomes. Very little is known about factors influencing knowledge about the HPV virus and vaccine in rural universities.

### Methods:

A cross sectional study was administered to undergraduate students in general studies courses at a small rural university in Appalachia. Knowledge of sexual health and the HPV vaccine was measured along with demographics and health behaviors. Independent samples t-tests were used to measure differences in knowledge scores among specific demographic groups. Bivariate correlation was used to measure the relationship between knowledge and number of sexual partners.

### Results:

Participants consisted of 157 students (58% male). Independent sample t-test showed that females ( $M=3.86$ ,  $SD=1.33$ ) had a significantly higher sexual health knowledge than males ( $M=3.17$ ,  $SD=1.44$ ;  $t(149)=2.97, p=.003$ ). The majority (86%) reported having a regular doctor, however no significant difference was found between participants who reported having a regular doctor  $t(149)=-.812, p=.418$ . Bivariate correlation between knowledge and number of sex partners showed no significant relationship. ( $r=-.48$ ;  $p=.56$ )

### Discussion:

Findings in this study show a need to increase educational efforts, particularly in the male population. Additionally, while it was encouraging that such a high percentage had a regular doctor, it is concerning that this did not increase their knowledge of sexual risk or the HPV vaccine. Thus interventions are needed to encourage health care providers to use their role to educate this population about risk and vaccination. Additionally, the finding that number of sexual partners was not related to knowledge shows that students who have more sexual partners (i.e. greater sexual health risk), they do not necessarily have greater knowledge about these risks. This population should also be targeted for education and promotion of the HPV vaccine.

## **The Influence of Perceived School Importance on Adolescent Smoking Intensity**

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Abstract

Smoking is currently one of the most detrimental causes of preventable chronic disease. Lower levels of education attainment are linked with poor health outcomes in adulthood. Further, adults who smoke generally have lower levels of education. Smoking in adolescence is linked with poor educational outcomes such as dropout and academic performance. Little is known about the influence of perceived academic importance on adolescent smoking intensity. Utilizing secondary data collected through the Not-On-Tobacco intervention, this study explored the influence of perceived school importance, nicotine dependence, gender, race, and grade on smoking intensity in a sample (N=197) of adolescent smokers seeking cessation. Results showed that perceived school importance  $t(191) = -2.96, p < .003$ , nicotine dependence  $t(191) = 9.84, p < .000$ , grade  $t(191) = 3.54, p < .00$ , and gender  $t(191)=2.52, p < .02$  were all significant predictors of smoking intensity. Due to the established relationship between smoking and poor educational performance and the relationship between both smoking and education and poor health outcomes, these findings identify a need to emphasize the importance of educational attainment in intervention efforts.

Smoking continues to be one of the most detrimental yet preventable causes of chronic disease despite ongoing tobacco prevention and cessation efforts in the United States [1, 2]. Although adolescent tobacco use shows a modest decrease, 2009 national data indicate that 46% of 9<sup>th</sup> through 12<sup>th</sup> graders reported ever trying smoking [3]. Furthermore, about 20% of high school aged adolescents are current smokers, having smoked at least once in the past 30 days [3]. These figures are alarming since early smoking initiation increases the likelihood of adult tobacco dependence [4]. Smokers also have poorer overall health status and spend more financially on medical care compared to non-smokers [3].

Another demonstrated predictor of health behavior is education. In general, higher levels of education show positive associations with health and increased life expectancy, and negative associations with health risks and health disparities [5]. Of critical importance to the present study, research indicates a negative relationship between years of education attained and smoking among those over age 25. Cutler, Deaton, and Lleras-Muney (2006) found that adults with more years of education were less likely to smoke [6]. Education also influences smoking cessation. Adults with lower education levels were less likely to have successful smoking cessation attempts [4]. With youth, the relationship between years of education attained and smoking status is difficult to examine because young people are still in the process of completing their schooling.

In contrast to educational attainment, the academic experience of youths still in school has potential for multi-dimensional examination of the relationship between substance use and education through other constructs such as academic performance, academic-related behaviors, and attitudes towards academics [7]. Low academic

achievement in high school can have serious implications for high school completion and college matriculation because it is related to school dropout, and thus, educational attainment [5].

Cigarette use is negatively related to academic achievement among adolescents. In a national sample of 8<sup>th</sup> grade students, a low level of academic achievement, based on self-reported average letter grade, was associated with an increase in cigarette use over time. Students with high academic achievement were less likely than those with lower levels of achievement to use cigarettes or increase cigarette use over time [7]. High school juniors who reported smoking at least one cigarette in the past 30 days had a lower odds of completing high school and matriculating into a four year college compared to non-smokers [8]. Students who smoke also have difficulties performing well in school and being in the school environment as a result of substance use behaviors [7].

Other academic-related behaviors are also associated with substance use. This includes school misbehavior variables such as classes skipped, days of school skipped, school suspensions, and staying after school for misbehavior [7]. Students who are absent from school, with or without permission, are more likely to engage in health risk behaviors like smoking [9]. Studies exploring smoking intensity and academic performance have found that young adolescents who reported smoking daily or several times a week were more likely to report missing school than those who never smoked or were infrequent smokers [10, 11].

There is little research on associations among attitudes toward academic achievement and smoking. One study found that 8<sup>th</sup> grade students reporting higher cigarette use had lower levels of school bonding and felt less commitment to school and

school effort [7]. Additionally, there is minimal knowledge on the relationship between academic achievement and smoking intensity among youths. Very little is known about how adolescent smokers perceive the importance of school and how these perceptions may be related to smoking intensity. The purpose of this study is to explore the relationship between perceived school importance and smoking intensity among high school students enrolled in a smoking cessation intervention. We hypothesized that higher levels of perceived academic importance would have a negative relationship with smoking intensity.

## **Method**

### **Participants**

Participants for this study included teens who voluntarily participated in the Not-On-Tobacco (*N-O-T*) school-based smoking cessation program [12]. Participant data for the present investigation were derived from a larger, multi-state database of N-O-T studies spanning 1997 to 2009 (N=8,855). Specifically, the analytic sample (N=197) included baseline data from participants from two studies in which data were available on two primary measures of interest: school importance and nicotine dependence. Consistently, participants were recruited for the enrollment across studies using flyers, school announcements, and word of mouth by N-O-T program facilitators [13]. Inclusion criteria for the analytic sample included teens between the ages of 14-19, in the 9-12 grades, and who smoked at least one cigarette per day on weekdays/weekends. The study was approved by the West Virginia University Institutional Review Board.

### **Procedures**

Not-On-Tobacco is a 10-session school-based smoking cessation program delivered by trained facilitators [12]. N-O-T is a gender-tailored intervention specifically for teens

and is delivered in same-gender groups of approximately 8-12 participants each led by same-gender facilitators. Program content and methods cover salient developmental issues for teens including peer pressure, coping skills, and decision making in addition to cessation strategies [12, 14-16]. N-O-T is a federally recognized Substance Abuse and Mental Health Administration (SAMHSA) evidence-based Model Program, a National Cancer Institute (NCI) Research Tested Intervention Program, and an Office of Juvenile Justice and Delinquency Prevention (OJJDP) Model Program. Studies on program effectiveness indicate end-of-program intent-to-treat quit rates between 15% and 19% [12] and cost-effectiveness analysis indicate N-O-T is a highly cost effective option for school-based tobacco intervention (compared to brief intervention) [17]. All studies followed equivalent protocols.

### **Measures**

Each participant was given a battery of standard assessment measures at baseline that assessed demographic information, smoking history, nicotine dependence, and school performance. The criterion variable, smoking intensity, measured average number of self-reported cigarettes smoked per day. Smoking intensity was created by combining two items that asked the number of self-reported cigarettes smoked per day Monday through Friday and the number of self-reported cigarettes smoked on Saturday and Sunday, then taking the average over 7 days.

$$[(\# \text{ cigarettes weekdays } * 5) + (\# \text{ cigarettes Sat \& Sun } * 2)] / 7$$

Studies examining smoking intensity among adolescents have not consistently used a survey item or group of items to characterize smoking intensity. However, Eppel and colleagues (2006) conclude items querying number of cigarettes smoked per month have

lower test- retest reliability, so measuring smoking intensity based on weekly self-reported cigarette use may be a more reliable measure of smoking intensity [18].

**School Performance Measures** Seven measures of perceived school performance were obtained from the baseline data collected from participants (See table I). A factor analysis with varimax rotation was performed and three of the measures of school performance “How important is regular school attendance to you?,” “How important is it to you to get good grades?,” and “How much did you enjoy attending school last semester?” factored together (See table I). The remaining perceived school performance measures did not factor together and were therefore not used in this study. The three school performance measures were combined to create a composite score for the underlying factor, perceived school importance, which ranged from 3 (not at all) to 15 (very important). Additional predictors included age, grade, race, sex, and nicotine dependence. Nicotine dependence was measured using the teen Fagerstrom Tolerance Questionnaire (mFTQ) [19], including seven items for a composite score ranging from 0-9 (with 0 being no dependence and 9 being substantial dependence). Race was dichotomized to form two categories, those who identified as whites and those who identified as any other race because there were so few non-white students in the final analytic sample.

### **Statistical Analysis**

Data analyses were conducted using STATA 10.0IC [20]. Initial variable exploration checked for percentage missing, normality, and outliers. Ordinary Least Squares (OLS) multiple regression models were tested. Missing data for each variable of interest was less than 3% and were deleted listwise from the analysis. Post-hoc model fit tested Gauss-Markov assumptions and model fit were assessed.

## Results

A total of 197 participants completed baseline evaluation assessing school importance and nicotine dependence with no missing data. Participants were primarily female (61.42%) and Caucasian (89.34%). Most students were in the 9<sup>th</sup> (30.46%) and 11<sup>th</sup> (29.95%) grades. Average smoking intensity was 11.67 cigarettes per day.

OLS multiple regression was performed between smoking intensity as the criterion variable and perceived school importance, nicotine dependence, race (white vs. non-white), grade, and gender as predictor variables. Assumptions were evaluated including normality, outliers, linearity, multicollinearity, and homoscedasticity. School importance had a slight negative skew that worsened with transformation. Therefore, the variable was not transformed. One outlier that exhibited significant influence on the other variables was not included in the final analysis.

A significant regression equation was found ( $F(5, 191) = 25.49, p < .000$ ), with an adjusted  $R^2$  of .38. The adjusted  $R^2$  value of .38 indicates that the model accounts for more than a third of the variability of smoking intensity. School importance  $t(191) = -2.96, p < .003$ , nicotine dependence  $t(191) = 9.84, p < .000$ , gender  $t(191) = 2.52, p < .02$ , and grade  $t(191) = 3.54, p < .00$  were significant predictors of smoking intensity. Race  $t(191) = 0.437, p > .50$  was not significant. Based on coefficient scores, for every unit increase in perceived school importance, there is a predicted 0.45 decrease in smoking intensity when controlling for covariates. Additionally, for every unit increase in nicotine dependence there is a 1.78 predicted increase in smoking intensity when controlling for covariates. Males displayed increased smoking intensity over females  $\beta = 1.82$ . For every unit increase in grade, there is an expected 1.19 increase in smoking intensity (See table II).

## Discussion

This cross-sectional study explored the relationship between perceived school importance and smoking intensity among a sample of smoking high school students seeking cessation. Consistent with previous N-O-T studies [21, 22], nicotine dependence was the best predictor of smoking intensity at baseline among the variables in our model. However, the regression model in this study shows that even when controlling for nicotine dependence, perceived school importance is a significant predictor of smoking intensity. In addition, grade also influences a student's smoking intensity, although this result is expected due to maturation and increased use as teens age. Consistent with previous NOT studies [23], gender was also a significant predictor with males having higher levels of smoking intensity than females.

It should be noted that participants are unique among teen smokers due to enrollment in a cessation program (N-O-T). As predicted, perceived school importance has a significant influence on smoking intensity. This finding is noteworthy due to the established positive relationship between smoking and high school dropout [24, 25] and the established positive relationship between education and health [5]. These findings could drive intervention efforts to both prevent or decrease smoking and promote education importance and performance. Due to the negative relationship between educational attainment and smoking [6], increasing perceptions of school performance may be critical among teen smokers. Particularly with teens seeking cessation services, emphasizing the importance of academic performance could have a lasting impact on their success with cessation and health throughout the lifespan.

Limitations include the fact that participants were all enrolled in a cessation program, which could bias their results. Therefore the findings are not generalizable to all adolescent smokers. A more diverse sample including adolescent smokers not seeking cessation would be required to generalize results to a population beyond those students included in this study. Future studies should examine longitudinal school performance measures and smoking intensity among adolescent smokers pre- and post-intervention. Studies that monitor adolescents over time may provide insight into temporality and causality. Further studies may also be conducted to analyze changes in school performance measures and smoking intensity among adolescent smokers exposed to various smoking cessation interventions.

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Table I: Summary of Factor Loadings for Varimax Orthogonal Factor Rotation

Item	Factor 1	Factor 2	Communality
1. About how many days were you absent last semester?	.181	.197	.072
2. How important is regular school attendance to you?	<b>.847</b>	.156	.741
3. On average, what kind of grades did you get last semester?	.169	.760	.606
4. How important is it to you to get good grades?	<b>.600</b>	.300	.450
5. How much did you enjoy attending school last semester?	<b>.490</b>	.223	.289
6. How many clubs and activities are you involved in (e.g. football, art club, student government, etc)?	.290	.344	.162
7. Were you involved in any situations during the past marking period which resulted in you receiving a disciplinary action (detention, suspension, etc)?	-.109	-.332	.122

Table II: Predictors of Smoking Intensity

	<i>B</i>	<i>SE b</i>	<i>p</i>
School Importance	-0.457	.15	0.003
Nicotine Dependence	1.78	.18	0.000
Race (white/not-white)	0.883	1.13	0.437
Grade	1.19	3.54	0.000
Gender	1.82	.721	0.013
Constant	-4.67	4.00	

$R^2 = .38$ ; adjusted  $R^2 = .36$



**MUCKLESHOOT INDIAN TRIBE  
DEPARTMENT OF EDUCATION**



**TITLE OF PRESENTATION: Muckleshoot Indian Tribe: Best Practices in Tribal Education Partnerships**

**TOPIC AREA OF THE SUBMISSION: Indigenous Education/Best Practices in American Indian Education**

**PRESENTATION FORMAT: Panel Session**

**DESCRIPTION OF OUR PRESENTATION:**

Since the late 1950's, when Muckleshoot Tribal women began conducting early childhood education classes in kitchens and garages of community member homes, the Muckleshoot Tribe has focused on the importance of education for its members and endeavored to develop substantive partnerships that have enabled Tribal members to be successful in their academic and career pursuits. From this history of dedication to education, this paper will discuss some of those partnerships and their purpose.

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## **Muckleshoot Indian Tribe: Best Practices in Tribal Education Partnerships**

Since the late 1950's, when Muckleshoot Tribal women began conducting early childhood education classes in kitchens and garages of community member homes, the Muckleshoot Tribe has focused on the importance of education for its members and endeavored to develop substantive partnerships that have enabled Tribal members to be successful in their academic and career pursuits. From this history of dedication to education, this paper will discuss some of those partnerships and their purpose.

### **Federal Head Start**

With initial funding beginning in 1965, the Muckleshoot Head Start Program is one of oldest, continuous, Native American Head Start programs in the United States. The program serves 90 children ranging in ages from 3-5. The program also provides significant services to the families of those children. As a part of the program's holistic mission to prepare the student academically, physically, socially and behaviorally for the leap into K-12 education, the program has developed relationships with local speech and language, occupational and physical therapists. These professionals provide contracted services to the students who may face development delays or those who may need certain augmented services in order to progress.

The Muckleshoot Indian Health Clinic also provides special walk-in dates for the Head Start program related to hearing and immunization evaluations which are necessary for program admission purposes.

The Head Start Program maintains relationships with the two local school districts whose boundaries adjoin the Reservation as well as, the Muckleshoot Tribal School. Through these relationships the Head Start faculty is able to prepare students for the transition to kindergarten. By knowing the academic and social expectations of the receiving school the program is able to insure that the Head Start graduates will be well prepared for that transition. Additionally, the program does a Kindergarten Visit for its prospective graduates. The students visit the a kindergarten class in the school district to which they expect to transfer and are able to observe what goes on in those classes. The students and parents appreciate these field trips as the trips serve to sooth the jitters on the first day of kindergarten.

At the Washington State level, the Muckleshoot Head Start Program has a long standing relationship with the Office of the Superintendent of Public Instruction (OSPI) through its involvement in the USDA/OSPI-Child & Adult Care Food Program. This program plays a vital role in improving the quality of day care by making it more affordable for many low-income

families. Each day, 3.3 million children nation-wide, receive nutritious meals and snacks through CACFP.

### **Muckleshoot Tribal School**

The Muckleshoot Tribal School is jointly funded by the Bureau of Indian Education and the Muckleshoot Indian Tribe. The school began in 1984/85 and as it was housed in a community center that was not designed to be a school, meeting the mission of K-12 education was often challenging and very creative. Since the school's beginning in 1984, it has maintained close and strong connections with the BIA/BIE. The school flourished and by 2005 when there was no additional space to add a portable buildings, the Tribe began to negotiate with the BIA for building a new school, designed to function as such. In 2009, on September 9<sup>th</sup>, the Muckleshoot Tribe proudly opened on a 37 acre site, the 113,000 square foot, K-12 Muckleshoot Tribal School.

However, before the permanent location of the Tribal School was completed the Tribal leadership forged an agreement to provide additional services to the Native students of the community. In 2005 the Muckleshoot Indian Tribe developed their first inter-local agreement with a public school district. This agreement with the Enumclaw School District, one of the two school districts which shares boundary lines with the reservation, provides numerous benefits to the students and administration of the Muckleshoot Tribal School. These benefits include:

- Access to dual enrollment for students in both school districts to take classes not offered in their school.
- The Muckleshoot Tribal School is able to use the ESD substitute teacher and non-certified employees list when absences need to be filled.
- Shared access to certified staff for in-service training.
- Administrative assistance in accessing FTE state funding.

In 2010, the inter-local agreement was extended through 2014.

As a result of this cooperative relationship, in June 2010 the Puget Sound Educational Service District, presented the Muckleshoot Tribe with both a PSESD Community Recognition Award and the PSESD Regional Recognition Award. In the words of the Puget Sound ESD Deputy Superintendent, Janice Watson, "Each year, we ask superintendents to nominate deserving community individuals or groups that have made a profound impact in the schools." From the group of community awards a regional winner is selected. The Muckleshoot School Board Chairperson at that time Anita Pedro, made this comment, "We sincerely appreciate this recognition. It's taken a lot of hard work from everybody. Our relationship with Enumclaw is really strong, and I think it is getting stronger."

The Tribe also has a long standing relationship with Auburn School District. Current Tribal Chairperson, Virginia Cross served as an employee in the role of the Indian Education Specialist of the Auburn School District for 22 years, and following Ms. Cross, Tribal member Denise Bill, Ed.D, filled the position for a number of years as well. These two tribal members set the ground work for the Muckleshoot/Auburn School District relationship. The Tribe now has a formal grantor/grantee relationship with the school district. The grant from the Tribe allows the school district to fund additional certified teachers who offer remedial assistance in foundational subjects such as reading and math at the elementary level. The grant also provides for the funding of Indian Culture Specialist who provides an afterschool program that focuses on regional tribal traditions, history and dance. It is a popular activity for the elementary students it serves and has grown over the past three years.

Correspondingly, the Tribe has a grantor/grantee relationship with the Enumclaw School District. Through this grant the Tribe augments the salary of the Indian Education Specialist, Cathy Calvert, Ed.D, ABD, a Muckleshoot Tribal member, as well as the Indian Education Assistant position in the ESD. The grant also provides for the augmentation of the operational funding of the Indian Education Office within the ESD.

Through the Washington State Indian Education Department and other OSPI departments, the Muckleshoot Tribe has maintained a close working relationship with the Office of the Superintendent of Public Instruction (OSPI). The Tribe's Department of Education was pleased to be fully involved in the project, "Since Time Immemorial: Tribal Sovereignty in Washington State," a ground-breaking curriculum initiative made possible through federal, state, and tribal funding. This project seeks to build lasting educational partnerships between school districts and their local tribes via elementary, middle, and high school curriculum on tribal sovereignty.

### **Adult and Higher Education**

The Muckleshoot Tribal College and Muckleshoot Scholarship Program offer access and affordability to Tribal members seeking to broaden their academic and career horizons through college degrees, certificates, workshops and training programs.

The Muckleshoot Tribal College offers a higher education learning center type of environment in that it brings together under one umbrella a number of degree opportunities through MOU and MOA agreements with local, regionally accredited higher education institutions. These colleges and universities provide on-site instruction leading to degree and certificate programs for Muckleshoot Tribal members. Members of the extended community are also able to enroll

in these programs at their own expense. Agreements currently exist with both public and private institutions.

The Muckleshoot Scholarship Program focuses on the affordability aspects of a college education for Muckleshoot Tribal members. The Tribe provides its enrolled members the ability to attend the regionally accredited college or university of their choice with Tribal financial assistance. The Scholarship Program has formed relationships with colleges and universities from Maryland to Alaska as they assist Tribal members in pursuing their academic and career goals.

Additionally, the Scholarship Program provides instruction and advisement in the process for submitting the Financial Aid Free Student Application (FAFSA), thus helping students maneuver the Federal process for accessing sources of financial funding.

### **Department of Education**

In June of 2008 the Muckleshoot King County Library Branch opened on Muckleshoot Reservation Land. This wonderful event was the culmination of a vision by Muckleshoot leadership that saw this resource as so important that they donated the land for the building of the facility. The Department of Education was involved in the design selection and took an active role in insuring that the structure would fit with environment and cultural aesthetic of the Muckleshoot Reservation. This was accomplished by developing a strong relationship with the King County Library System and King County, Washington, government offices. The Muckleshoot Planning Office under the strong and able leadership then of Steve Taylor, also provided strong support and collaboration to this endeavor.

NIEA and USDOE Listening Opportunities- The Tribe has also developed relationships and with other TEAs, professional education organizations and the Federal government through opportunities like responding to the request for feedback from Tribal Officials on reauthorization of the Elementary and Secondary Education Act (ESEA) from the U.S. Department of Education. Comments were presented by Joseph Martin, Muckleshoot ATOM-Education, on July 15, 2010, at the regional Tribal Leaders Consultation meeting in Puyallup, Washington at Chief Leschi School. These comments included the following:

- The purpose of education must be redefined to include the Tribal perspective.
- We must endeavor to strengthen Tribal control in all education systems. Specifically, our treaty rights set forth our sovereign legal status and contain a provision for the education of our Tribal members.

## **The ESEA Standards and Assessment**

- We do not support the implementation of Common Core Standards because they are both culturally biased and culturally exclusive.
  - Curriculum and assessment must be culturally-based and approved by local Tribes.
  - Tribes have the following concerns regarding current forms of student assessment:
    - They tend to narrow the curriculum.
    - They tend not to accommodate diverse learning styles.
    - They tend to be standardized and force assimilation.
  - Assessment should:
    - Measure and highlight abilities and needed areas of improvement. Results of assessment should not measure failure.
    - Integrate the evaluation of the critical knowledge that Tribal communities believe all Tribal citizens must possess, i.e. mastery of Tribal language, thorough understanding of Tribal history, treaty rights, cultural traditions, etc.
    - Be designed to assess the system and not to penalize the student.
  - States should be prohibited from implementing high stakes testing.
  - Title III funding under ESEA should be expanded to provide further restoration of Native American languages.
  - Funding under Title VII must be maintained as a stand-alone funding source and used to address the educational needs of Native American students.
    - We believe that merging Title VII into Title I will undercut the federal government's trust responsibility to support high-quality academic and cultural education for Native students.
    - We believe that eliminating Title VII as a stand-alone funding source could also lead to decreases in funding needed to keep Native students on the path to college and career success.
  - Restoration and full funding of the Esther Martinez Native American Languages Preservation Act.
  - Restore full funding to Head Start.
  - Maintain full funding of NACTEP (Native American Career and Technical Education Program).
  - Establish a study to explore the American Indian Youth Dropout issue-- the highest among any ethnic group in the nation.
-

The Tribe has also strongly asserted at previous US Department of Education listening sessions that impact aid funds, as represented through the ESEA, Title VII Section 701, Indians, Native Hawaiians and Alaska Natives, must be used solely and exclusively in the education of Indians, Native Hawaiians and Alaska Native children and these educational goals must be defined by the Parent Advisory Committees as mandated in the ESEA.

Thank you for this opportunity to share our perspective. These views are based upon our belief that Federal treaty obligations to our Native Nations are based upon the principles of educational opportunity, equity and the critical importance of all Native education being rooted in our heritage languages, cultural practices, values and traditions.

**1. Title of the submission :** Three Steps of Predicting of Basic Science Process Skill Based on Eye Movement

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**6. Abstract and/or full paper :**

As predicting is defined as stating the outcome of a future event based on a pattern of evidence (SAPA), predicting is an important skill for science learning and problem solving as it utilizes other basic science process skills such as observing, classifying, measuring and inferring. This study was aimed to analyze elementary school student's eye movement of predicting in science problem solving situation.

Forty students of 6th grade from South Korea participated and solved two problems designed to assess their predicting skill. They required predicting skill as participants predicted the gradual change of a shape and temperature change. SMI's Eye tracker was used to collect and analyze eye movement data.

Among 40 students, 15 students (group A) got all right answers, 17 students (group B) got only half right and 8 students (group C) got all wrong answers. Group A spent little time on reading questions but fixated on keywords of the question. They showed active eye movements between clues, discovered the tendency and checked its accuracy. Group B fixated on the keywords and clues but had difficulty finding the tendency. Group C spent long time on understanding the questions but missed the keywords and clues. They showed a lot of meaningless saccades and busy saccades.

These results suggest a 3-step-predicting-process. Six cognitive strategies that participants used in the process of predicting were found during process analysis. Three steps of predicting and cognitive strategies would help develop teaching methods in scientific predicting problem solving process.

**Title of Submission: Exploring Teachers' Pedagogy for English Language Learners in Mainstream Classrooms**

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**Abstract**

In Alberta the influx of immigrants and refugee families from many countries has resulted in an increasing number of minority students entering mainstream classrooms. Students may have limited English skills and in some cases none at all. These students are only able to communicate in their first language. This situation is posing challenges for mainstream teachers in addressing the academic needs of these students. Teachers who are not versed in the student's first language are at a disadvantage. This study examined the pedagogy of three teachers who were teaching mainstream classes that contained at least 50% English language learners (ELLs). Teacher pedagogy related to teaching ELLs comprises a critical factor in facilitating student success in school.

The purpose of this study was to explore the pedagogy of three teachers who taught ELLs, how they adapted their instructional strategies, and the supports they deemed necessary to effectively teach ELLs. The research consisted of an interpretive case study conducted over a period of three months in the spring of 2011. Through one-on-one interviews, three teachers described the pedagogical approaches they used when teaching ELLs of varying linguistic and cultural backgrounds and experiences. In addition to the semi-structured interviews, field notes, and classroom observations, my own reflective research journal also provided data for the study.

In analyzing the data several themes were identified which were organized into three headings: (a) challenges faced by teachers, (b) instructional approaches employed by teachers, and (c) supports the teacher participants identified as necessary for teaching ELLs.

Recommendations are made in regard to university preparation programs for pre-service teachers, the need for on-going in-services for practicing teachers and increasing the resources for teachers to support their teaching of ELLs in mainstream classrooms.

Submission ID: 852

1. Title of the submission:

Relationships among self-concept in music, musical content knowledge, and music teaching efficacy of early childhood pre-service teachers in Korea

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## 6. Abstract:

This study aimed at (1) examining early childhood pre-service teachers' self-concept in music and music teaching efficacy, and the actual level of understanding of musical content knowledge and (2) investigating the relationships among them. The subjects consisted of 201 undergraduate students, majoring in early childhood education and had taken at least one music-related class at colleges in Gyeongnam, Korea. As for the method of this study, SCIM (Self-Concept in Music Scale) which was originally developed by Svengalis (1978) and modified by Phillips (2002), the scale of 'Understanding of Musical Content Knowledge' developed by Kim et al. (2011), and MTEBI (Music Teaching Efficacy Belief Instrument) which was originally developed by Riggs and Enochs (1990) and modified by Bang and Park (2005) were used. The data was analyzed using SPSS 18.0.

The results of this study are as follows. First, the mean score of early childhood pre-service teachers' self-concept in Music was about the average, actual understanding of musical content knowledge was high on harmony and low on Melody in terms of the variables, and their music teaching efficacy was over the average. Second, early childhood pre-service teachers' self-concept in music and music teaching efficacy, and the actual level of understanding of musical content knowledge were positively correlated. In addition, early childhood pre-service teachers' music teaching efficacy exerted a statistically significant influence on the self-concept in music and the actual level of understanding of musical content knowledge, explaining 19% of music teaching efficacy.

1. Title of the submission.

Effects of exposure to violent scenes in various media on aggressive behavior toward student peers on the Internet and in Japanese schools.

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6. Abstract and/or full paper.

This study examines the effects of exposure to violent scenes in various media on students' aggressive behavior toward student peers on the Internet and in school. A total of 2079 junior high school students (1118 males, 961 females) and 928 high school students (528 males, 400 females) were asked to respond to the questionnaire twice within approximately a six-month interval (2-wave panel survey). The question items were how frequently they were exposed to violent scenes on television, in video games, on the Internet, and in books, comics, magazines, and newspapers in the previous month and whether they had experienced 10 aggressive behaviors toward peers on the Internet, and 12 such behaviors in school in the previous month. Results of the Poisson analysis,

categorized by school level and gender, mainly indicated that the aggressive behavior of both male and female junior high school students had increased toward peers in school, as they were exposed more frequently to violent scenes in video games, on the Internet, and in books and comics. The aggressive behavior of male high school students had decreased on the Internet, as they were exposed more frequently to video games and printed media such as books, comics, and newspapers. In contrast, female high school students, who were exposed more frequently to television and video games, showed more aggressive behavior toward peers on the Internet.

## **SOCIAL BACKGROUND CHARACTERISTICS AND JOB SATISFACTION OF GREEK PRIMARY AND SECONDARY SCHOOL TEACHERS**

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During a weekday most people spend about half of their time<sub>2</sub> working (Moghimi, 2006). Based on the results of many studies in last decades, seems that job satisfaction is one of the most critical factors that has been of concern to many reasearchers in order to improve the quality of working environment. Many researchers argue that drawing attention and improving teachers' job satisfaction could have an effect on school, on students' learning outcomes and on teaching quality (Zigarelli, 1996; Heller, Clay & Perkins, 1993; Kantas, 1998; Michaelowa, 2002; Organ & Bateman, 1991). One issue that has been much investigated is to what extent job satisfaction has a compensatory function for teacher with different social background. Although many studies have shown an impact of social background characteristics on teacher's job satisfaction, others have found that personal characteristics have negative effect (Iqbal & Akhtar, 2012; Koustelios, 2001). The purpose of this research is to ascertain whether there is an effect or not of teacher social background characteristics on different aspects of teacher satisfaction among primary and secondary teachers in Greece. The Greek educational system is highly centralized (i.e. IACM/FORTH, 2003)

There is no consesus on giving a specific definition to job satisfaction. Nevertheless, Lawler (1973) suggested that the meaning of job satisfaction

include all those things and feelings persons actually get from their jobs. Numerous instruments have been developed to measure job satisfaction in education (e.g. 'Job Descriptive Index' (JDI) (Smith, Kendall, & Hulin, 1969), 'Minnesota Satisfaction Questionnaire' (MSQ) (Weiss, Dawis, England, & Lofquist, 1967) and 'Employee Satisfaction Inventory' (ESI) (Koustelios, 1991; Koustelios & Bagiatis, 1997)). These days a new instrument Teachers' Satisfaction Inventory (TSI) has been developed to measure teachers' satisfaction in primary and secondary education in Greek schools. TSI is a multidimensional construct consisted of five latent factors; 'principal', 'colleagues', 'job itself', 'students', and 'working conditions' indicating an excellent content, construct validity and a satisfactory reliability.

The total sample of this study was 429 teachers coming from 28 schools in primary and secondary education from different parts of Greece. The analysis of structural equation modeling was conducted to investigate how the facets of TSI are affected by the dependent variable; age, gender, educational status, job status, family status and years of teaching experience. Mplus (Muthén & Muthén, 2010) software was conducted to analyze the data.

Findings of the present statistical analysis confirm that Greek teachers are; satisfied with the interpersonal relations with their colleagues, principal and their students; with job itself, and working conditions. Furthermore, this study shown that gender and family status can be significant predictors variables for job itself and working conditions. In addition teachers' experience can affect the relations of teachers with their students.

This study may help the educational leaders in understanding and identify the characteristics of primary and secondary education level providing ideas about teachers interaction with teaching and learning environment, and could also influence job satisfaction of teachers. Last but not least, may be offered advices for authorities and researchers to improve teaching quality in an educational system where centralised actions are dominated.

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## Development of an Instrument to Assess Size, Scale, and Structure Concepts in Introductory Astronomy

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### *Paper Summary*

There is a growing recognition that students' enter classrooms with preconceptions which act as filters for new learning (Petrovic & Ruhf, 2008; Smith, diSessa, & Roschelle, 1993). Because this prior knowledge can interfere with concept mastery, it is imperative that instructors have a way to determine students' prior understandings and to determine whether these understandings have altered after instruction. Concept inventories can potentially provide this information. Previous research (e.g., Wuttiptom, Sharma, Johnston, Chitaree, & Soankwan, 2009) has indicated that "conceptual surveys" (p. 632) have a number of advantages including easy administration, objective scoring, and being able to be analyzed with statistics. In addition, "The development of multiple choice tests on students' misconceptions has the potential to make a valuable contribution, not only to the body of work in the area of misconceptions, but also to assist in the process of helping science teachers use the findings of research in this area" (Treagust, 1988, p. 160).

Confusion about astronomical distances has been found in previous research (e.g., Miller & Brewer, 2010; Trumper, 2001). Using open-ended questions, Miller and Brewer (2010) found that the percentage of students underestimating astronomical distances increased as the distance of an object increased. For example, 33% of the students in their sample underestimated the distance to the Moon but 99% underestimated the distance to the closest galaxy. The problem did not seem to be one of scale as much as it was a change in scale. The researchers noted that for about a third of the participants, the issue was not so much their estimation of astronomical distances as it was their, "...underestimating the enormous leap in distance between objects in the solar system and between interstellar objects" (p. 1557).

Students' understanding of astronomical distances has also been measured using multiple choice tests (e.g., Sadler, 1992). While these tests, with distractors taken from previous research on misconceptions, "...have the potential to provide instructors with more rapid yet still useful feedback..." (Petcovic & Ruhf, 2008, p. 251), there are multiple issues that must be considered. For example, the common use of questions where students select a best estimate or quantity for a particular astronomical distance can confuse, "...the students' intuitive conceptions about astronomical distances with their ability to understand large numbers" (p. 1551). There is also a broad realization that meaningful learning of science content requires conceptual understanding rather than memorization of facts and formulas (Bransford, Brown, & Cocking, 2000; Lightman & Sadler, 1993). Incorporating questions where students could have memorized a specific distance (e.g., Earth to the Sun) may be a measure of memory rather than conceptual understanding of distance (Miller & Brewer, 2010).

There is also a tendency in multiple choice tests to order the distractors sequentially with the largest (and correct) choice as the last one (Miller & Brewer, 2010), a pattern that test savvy

students soon detect. In addition, such an arrangement prevents students from overestimating; thereby failing to give them the opportunity to demonstrate whether they would overrate an astronomical distance. There is a need to include questions with distracters that are larger than the correct answer in assessments. Trumper (2001) used well-known objects such as balls and food to assess students understanding of distances between the Sun and Earth and between the Sun and the closest star. Even when objects such as these are used in questions, they are typically arranged in ascending order (Miller & Brewer, 2010). Trumper (2001) found that respondents underestimated distances when these objects were included in questions, even when something more tangible was used as a point of reference. According to Miller and Brewer (2010), the issue is not so much a lack of knowledge as it is due to understandings, "...based on personally experienced distances in the everyday world, whereas most distances in astronomy are vastly larger" (p. 1551).

The purpose of the current study was to develop a reliable and valid Size, Scale and Structure Concept Inventory (S3CI) that could assess undergraduate students' conceptual understanding prior to and after instruction in an introductory astronomy course, detect the presence of previously documented misconceptions, and evaluate instructional effectiveness. The current instrument was patterned after concept inventories developed in other disciplines such as the Force Concept Inventory in physics (Hestenes, Wells, & Swackhamer, 1992). The S3 Concept Inventory is comprised of 24 multiple choice questions designed by the researchers and evaluated by other content experts. This concept inventory was devised to cover the following content areas: size, scale, and structure. For the purposes of question development, size was operationally defined as an understanding of the relative and absolute dimensions of astrophysical objects, such as stars, galaxies, and the universe itself. Scale was defined as an understanding of the distances between objects in the universe, including the tremendously large differences between distances within a structure (e.g., the Solar System) and between structures (e.g., to the nearest star). Finally, structure was defined as an understanding of the geometry of astrophysical objects, as well as their relative positions in the universe, both hierarchically (e.g., stars are located within galaxies), and in distance from Earth. Additionally, it included an understanding of how these objects' positions evolve in time.

Within the three areas, previously documented misconceptions were targeted. Table 1 lists commonly found misconceptions in each of those areas.

Table 1:  
Common Misconceptions in Astronomical Size, Scale and Structure

<b>Content Area</b>	<b>Misconception</b>
Size	<ul style="list-style-type: none"> <li>a. Students think that planets and stars have similar sizes.</li> <li>b. Students think that all stars have the same size and luminosity.</li> <li>c. Students underestimate the physical size of astrophysical objects.</li> <li>d. Students confuse the size of the Milky Way galaxy with the size of the universe.</li> </ul>
Scale	<ul style="list-style-type: none"> <li>a. Students think that the distance to the nearest stars is only a few</li> </ul>

	<p>times larger than the size of our Solar System.</p> <p>b. Students underestimate the distances between galaxies.</p>
Structure	<p>a. Students think that the Earth, Solar System, and/or nearby stars are not part of the Milky Way galaxy.</p> <p>b. Students think that most objects outside our Solar System are approximately the same distance from Earth.</p> <p>c. Students underestimate the aspect ratio of the Milky Way galaxy's stellar distribution.</p> <p>d. Students think that the distances between galaxies are not changing with time.</p>

The researchers used both numerical and analogical questions to try and determine students' understanding of these key concept areas and attempted to arrange distracters so that the largest option was not always the last option. When possible, a numerical question was paired with a non-numerical question to assess students' understanding of the same concept. An example of paired questions from the current concept inventory can be found in Appendix A.

Researchers developing multiple choice assessments in higher education have tended to use Classical Item Analysis (Libarkin & Anderson, 2006), which was also used in the development of this concept inventory, with a focus on item difficulty and item discrimination. Classical theory comes from the work of Gullikensen (1950) and has been more recently labeled as Classical Reliability theory or True Score theory (Suen, 1990). In this theory, information about identifiable factors of individual test questions provide a guide for, "...the improvement of the test, and thus maximize the ultimate reliability of the total score" (Suen, 1990, p. 71). It is recognized that a major limitation of using this theory is that both item difficulty and discrimination are dependent upon the participants (Fan, 1998), which was why care was taken to obtain a sample that would be similar to the group of students who might use the inventory in the future.

Experts in teaching introductory astronomy courses were shown an initial version of the concept inventory and asked to complete a feedback form, noting whether each question assessed a particular concept; a ratio of agreement will be calculated for the purposes of content validity. In fall, 2013, the concept inventory was piloted in an introductory astronomy course with a sample of convenience (n = 44) taken from a small private liberal arts institution in the northeastern United States. Students completed each inventory twice, once at the start of the astronomy course and again in the last couple weeks of the course. Estimates of internal consistency reliability were determined using the Kuder-Richardson Formula #20 (KR20). Results from these analyses as well as an item analysis with instrument modifications will be presented. Implications and suggestions for future concept inventory development will also be discussed.

### **Acknowledgements**

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Appendix A  
Numerical and Non-Numerical Question Pair

The nearest stars (not including the Sun) are about \_\_\_\_ farther away than the Sun from Earth.

- a. 40 times
- b. 4,000 times
- c. 400,000 times**
- d. 4,000,000 times

Using a scale model where the Earth is a ball about the size of your hand (5 inches or 12 cm.), about how far away would you have to put the nearest star outside our solar system?

- a. across a football field/soccer pitch
- b. across town
- c. a one-hour airplane flight
- d. on the other side of the Earth
- e. on the Moon**

## Implementation of Inquiry-Based Activities in Undergraduate Engineering Courses

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### *Paper Summary*

Students in college level science (Jasien & Oberem, 2002) and engineering programs (Miller, Streveler, Olds, Chi, Nelson, & Geist, 2006; Prince & Vigeant, 2006; Self, Miller, Kean, Moore, Ogletree, & Schreiber, 2008) have been found to hold multiple misconceptions about heat, temperature, and energy. For example, Prince and Vigeant (2006) found that many engineering undergraduates viewed heat and temperature as equivalent while Self et al. (2008) determined that almost 30% of chemical and mechanical engineering seniors could not, "...logically distinguish between temperature and energy in simple engineering systems and processes" (p. S2G-1).

Persistent misconceptions have been hard to alter. As noted by Self et al. (2008), "It is very difficult to repair many of these robust misconceptions through simple lecturing..." (p. S2G-6). Yet, previous research (e.g., Walczyk & Ramsey, 2003) has found that lecture and recitation predominate in college science and mathematics courses. Carlton (2000) has noted that instructors need to provide thought-provoking questions and experiments that encourage the interpretation of evidence to help students' really learn key tenets in thermal physics, rather than focusing on rote knowledge from textbooks.

One promising strategy for altering misconceptions is the use of inquiry-based activities (Nottis, Prince, & Vigeant, 2010). Previous research has shown that these kinds of activities can be effective in altering undergraduate engineering students' misconceptions about heat transfer (Prince, Vigeant, & Nottis, 2009) and thermodynamics (Nottis, Vigeant, Prince, & Silva, 2013). For example, Nottis et al. (2013) found that while the mean pre-test scores on the Concept Inventory for Engineering Thermodynamics (CIET) (Vigeant, Prince, & Nottis, 2011) were similar for the activities (Yes) and no activities groups (No), after instruction, the inquiry-based activities group had a significantly higher mean score than the no activities group on the post-test,  $F(1, 749) = 23.57, p < .01, \eta^2 = .03$ . The mean score for the activities group increased approximately 15 percentage points from pre- to post-test while the no activities group only increased about 10 percentage points.

Since previous research has shown that inquiry-based activities can be a successful way to alter misconceptions in undergraduate engineering courses, it would be anticipated that faculty would readily use such methodologies. However, this is not always the case. For example, in one study looking at inquiry-based activities in thermodynamics, it was revealed that only 23.1% of the entire sample and 48% of the group using inquiry-based activities actually used and completed the Reversibility activities as recommended (Nottis et al., 2013). These results are consistent with other research that has found that, "Implementation of an educational innovation often meets with limited success" (Abrami, Poulsen, & Chambers, 2004, p. 202).

Wright and Sunal (2004) tried to uncover barriers that discouraged faculty from trying new and innovative pedagogies. The researchers surveyed faculty in mathematics, science, and technology at 30 institutions and found nine key barriers to implementation of new instructional methods including faculty unwillingness, students' unacceptance of non-traditional pedagogies, and failure on the part of institutions of higher learning to provide ongoing instruction in new methods. Walczyk, Ramsey and Zha (2007) attempted to get more detailed information about impediments to implementation by using a researcher developed survey, the *Incentives and Supports for Instructional Innovation Survey (ISIIS)*. This self-report evaluation was sent via the internet to science and mathematics faculty in Louisiana. One key finding was that about a fourth of participants were at institutions where there were either no policies regarding the importance of teaching or the weight of teaching had not been conveyed to faculty for key personnel decisions like tenure. In addition, a minority of faculty had received any pedagogical training while in graduate school. Without such training, "...faculty are unlikely to use innovative approaches to instruction or understand the need for them" (Walczyk et al., 2007, p. 97). This observation was also supported by previous research (e.g., Wyckoff, 2001). A more recent study added to the base of information by identifying the most frequent barriers for implementing new instructional innovations as lack of instructor time and faculty concerns about content coverage, departmental norms, fears of student resistance, class size and room layout, and the inflexible structure of the university semester (Henderson & Dancy, 2011).

It is not enough to develop new instructional strategies that are more effective for promoting student learning than traditional methods. To significantly improve STEM education, effective instructional practices must be widely adopted by faculty. It has been noted that the biggest barrier to improving STEM education lies in getting faculty to actually use existing strategies that research has demonstrated to be more effective than traditional methods. Therefore, the purpose of the current study is to use feedback from participating faculty (3 Mechanical Engineers and 5 Chemical Engineers) in the development of a set of inquiry-based activities focusing on the heat transfer concepts of rate versus amount of heat transferred and thermal radiation that faculty finds to be more adoptable than the present activities. In the coming academic years, variations specifically developed to be more adoptable by requiring less faculty time, less experimental equipment, and less class time, will be assessed in class by participating faculty and both instructor and student outcomes will be assessed. This presentation will focus on the initial feedback, the changes made to the existing activities, and plans for the future.

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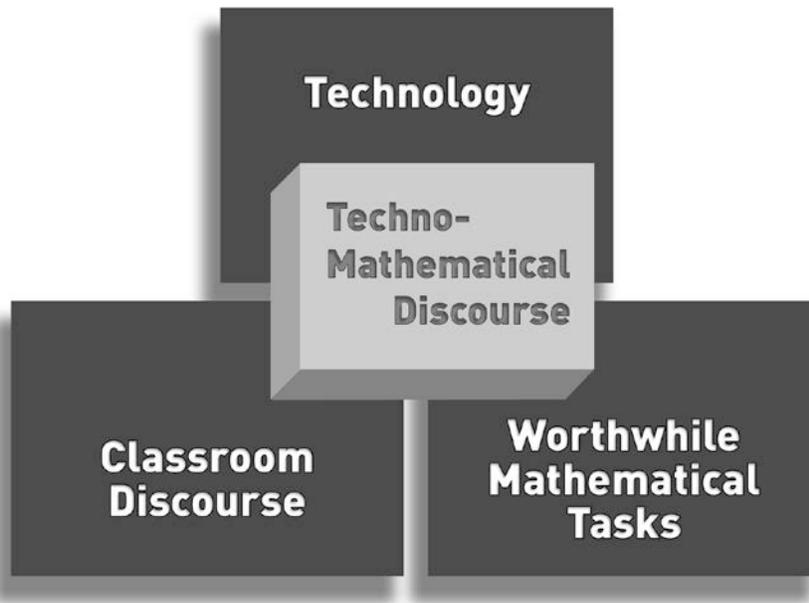
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Over the past few decades, reform efforts in mathematics education have called for classrooms where all students have access to engaging mathematics and high-quality instruction. Classroom discourse, technology, and worthwhile mathematical tasks have emerged as key components in developing this type of instruction and in how students learn mathematics. In this paper, we present Techno-Mathematical Discourse as an organizing framework for examining the interactions among these three emerging components.

### **Techno-Mathematical Discourse**

The convergence of classroom discourse, technology, and worthwhile mathematical tasks gives rise to *Techno-Mathematical Discourse* (see Figure 2). This discourse is unique, in that students use technological representations (e.g., virtual manipulatives) to mediate discussion while engaging in worthwhile mathematical tasks (Vygotsky, 1978). As an emerging construct, the techno-mathematical discourse framework provides a means for analyzing and interpreting aspects of social learning with technology during mathematics instruction.



*Figure 2.* Theoretical Framework of Techno-Mathematical Discourse (TMD)

In Techno-Mathematical Discourse, technology enhances the communication of mathematical ideas and supports students' learning of mathematics concepts. When learning mathematics concepts with technology in a discourse community, students have access to multiple modalities of mathematical representations. First, technology tools, such as virtual manipulatives, provide dynamic pictorial and symbolic representations of mathematics concepts. Second, the dynamic visual displays serve as common experiences about which students can engage in meaningful classroom discussions incorporating both verbal and gestural (i.e., embodied) interactions. Students' understanding of mathematical concepts is strengthened when they make connections among representations in pictorial, symbolic, verbal, and embodied modalities (Clark & Paivio, 1991). Of course, the strength of the techno-mathematical discourse is influenced by the affordances of the available technology tools, by the quality of the worthwhile mathematical tasks used for instruction, and by the teacher's ability to orchestrate the classroom discourse.

The following sections of this paper briefly describe the theoretical underpinnings related to the components of Techno-Mathematical Discourse: classroom mathematical discourse, technology in the form of virtual manipulatives, and worthwhile mathematical tasks. We conclude with examples of existing research related to Techno-Mathematical Discourse.

### **Theoretical Underpinnings of Classroom Mathematical Discourse**

We define classroom mathematical discourse as “the ways of representing, thinking, talking, agreeing, and disagreeing about mathematical ideas” (National Council of Teachers of Mathematics [NCTM], 2007, p. 46). Mathematical discussion, as described in this definition, reflects current mathematics education reform efforts, which call for classroom communities focused on the communication of mathematical ideas (NCTM, 2000). Here, the terms discourse and discussion are used interchangeably. Educational researchers have identified multiple characteristics of classroom mathematical discourse, including explanation, argumentation, and defense of mathematical ideas (Walshaw & Anthony, 2008). Sherin (2002) describes two elements of classroom mathematical discourse: process and content.

the *process* of mathematical discourse refers to the way that the teacher and students participate in class discussions. This involves how questions and comments are elicited and offered, and through what means the class comes to consensus. In contrast, the *content* of mathematical discourse refers to the mathematical substance of the comments, questions, and responses that arise. (p. 206)

The use of discourse and communication as a means to learn new concepts is emphasized by Vygotsky in his seminal work in sociocultural theory, *Mind in society: The development of higher psychological processes* (1978). Here, he describes learning as a socially constructed phenomenon and asserts three major tenets: (a) higher mental processes are determined by how

and when they occur, (b) higher mental processes first occur on the social plane (i.e., between people), and then occur on the individual psychological plane, and (c) higher mental processes are mediated by cultural tools and signs. (e.g., symbols, speech, and writing). Therefore, students develop understanding as they interact with other individuals through verbal or nonverbal communications or written words. This study considers technological representations (i.e., virtual manipulatives) as mediating cultural tools for mathematical learning.

Anna Sfard (2007) refers to the socially constructed phenomenon of learning as *commognition*—a combination of communication and cognition. She further asserts that thinking can be defined as “the individualized form of the activity of communicating, that is, as communication with oneself” (p. 569). Therefore, in order to deeply understand complex concepts, some form of discussion must take place—even if that conversation occurs within one individual. Piccolo, Harbaugh, Carter, Capraro, and Capraro (2008) also describe rich meaningful communication in the classroom setting as consisting of “interactive and sustained discourses of a dialogic nature between teachers and students aligned to the content of the lesson that addresses specific student issues” (p. 378). In other words, meaningful classroom discourse contributes to students’ understanding by promoting effective communication and articulation of thought.

The culture of a classroom also plays a considerable role in shaping classroom mathematical discourse. Sociomathematical norms (Yackel & Cobb, 1996) develop within a classroom and constitute what interactions are valued and what counts as an acceptable mathematical explanation. Through these interactions, students analyze and evaluate the mathematical thinking and strategies of others and deepen their own mathematical understanding. Students must organize and consolidate their mathematical thinking in order to communicate

effectively with their classmates and with the teacher (see Chapin, O’Conner, & Anderson, 2009; Cobb, Wood, & Yackel, 1993; Huang, Normandia, & Greer, 2005; Imm & Stylianou, 2012; Piccolo, Harbaugh, Carter, Capraro, & Capraro, 2008; Sfard, 2007).

### **Theoretical Underpinnings of Virtual Manipulatives**

Over the past few decades, technology has developed new ways to think about and to represent mathematics (Moreno-Armella, Hegedus, & Kaput, 2008). These new “cognitive technology tools” (Pea, 1985) enhance the learning of mathematics concepts by expanding representational possibilities and by amplifying and reorganizing students’ approaches to problem solving. An elaboration of the NCTM technology principle states,

Electronic technologies—calculators and computers—are essential tools for teaching, learning, and doing mathematics. They furnish visual images of mathematical ideas, they facilitate organizing and analyzing data, and they compute efficiently and accurately....

When technological tools are available, students can focus on decision making, reflection, reasoning, and problem solving. (NCTM, 2000, p. 24)

With the advancement of computer capabilities, virtual manipulatives have emerged as cognitive technology tools for use in mathematics classrooms. A virtual manipulative is defined as “an interactive, web-based visual representation of a dynamic object that presents opportunities for constructing mathematical knowledge,” (Moyer, Boylard, & Spikell, 2002, p. 373). Based on this dynamic nature, virtual manipulatives seem to be a combination of *manipulative models* (e.g., base-ten blocks, fraction bars, counting bears), which allow for concrete examples of mathematical relationships and operations and *static pictures*, which provide an image for a learner to internalize (Lesh, Post, & Behr, 1987). These “computer based

renditions of common mathematics manipulatives and tools” (Dorward, 2002, p. 329) provide teachers and students with expanded tools for thinking about mathematics concepts.

Computer-based representations vary in their level of cognitive fidelity (Zbiek, Heid, & Blume, 2007). Some representations offer manipulative tools that truly reflect the user’s actions and choices without dictating solution paths. Other representations include concept tutorials (with or without manipulative tools) to guide students to a predetermined understanding of the mathematics. Still, others present an electronic figure, either static or in motion, very similar to a textbook or worksheet, and Kay (2012) identifies some virtual manipulatives as open-ended and others as structured. Additionally, a recent meta-analysis of research on virtual manipulatives (Moyer-Packenham & Westenskow, 2012) identified five affordances offered by specific design features and elements of different virtual manipulatives: focused constraint, creative variation, simultaneous linking, efficient precision, and motivation. The varying characteristics of virtual manipulatives have implications for their instructional use.

The simultaneous linking of representations afforded by virtual manipulatives is based on Dual Coding Theory (Clark & Paivio, 1991; Paivio, 2007; Sfard, 1991; Skemp, 1987), which posits that learning occurs in two different manners: verbal and nonverbal. The verbal system deals with learning modes related to the linear functions of language (i.e., spoken word, written words and symbols). The nonverbal system deals with nonlinguistic learning modes and mental imagery (i.e., geometric figures, diagrams). Each system alone can process a limited amount of information at a time (Clark, Nguyen, & Sweller, 2006). However, the combination of verbal and nonverbal inputs results in increased ability to make connections between representations and to attend to more complex ideas. For example, students may use the Fractions—Rectangle Multiplication applet from the National Library of Virtual Manipulatives (<http://nlvm.usu.edu>) to

visualize the meaning of multiplying fractions. This applet enables students to manipulate the size of each factor and to observe simultaneous changes in pictorial (nonverbal) and symbolic (verbal) representations of the product. Virtual manipulatives have the capacity to combine representations from both systems, and thereby, increase working memory capacity. In these ways, technology tools enhance the mathematical content presented to students.

### **Theoretical Underpinnings of Worthwhile Mathematical Tasks**

The mathematical content and tasks presented in a lesson significantly affect the richness of classroom discourse. In order for rich discussions to take place, students must be presented with tasks worth talking about (Iiskala, Vauras, Lehtinen, & Salonen, 2011; Lack, 2010; Mendez, Sherin, & Louis, 2007; Sherin, 2002). Worthwhile mathematical tasks, as defined by NCTM (2007) promote communication, engage students' intellect, develop mathematical understandings and skills, represent mathematics as an ongoing human activity, and embed mathematics in meaningful contexts. For example, instead of having students simply memorize multiplication facts or mathematical vocabulary, worthwhile tasks embed the multiplication facts and vocabulary in "meaningful contexts that help students see the need for definitions and terms as they learn new concepts" (NCTM, 2007, p. 33).

A worthwhile mathematical task is one that engages students' intellect and calls for problem solving and mathematical reasoning. According to Smith and Stein (1998), tasks vary in their level of cognitive demand. Tasks with lower levels of cognitive demand involve reproduction of memorized facts and algorithmic procedures with no connection to the concepts underlying the procedures. They have clear solution paths and require no explanation of mathematical thinking beyond a description of the procedure used. Tasks with higher levels of cognitive demand (i.e., worthwhile mathematical tasks) involve multiple solution paths and/or

multiple possible solutions. Students must analyze the task and present solutions in multiple representational forms. Smith and Stein note that tasks with higher levels of cognitive demand likely produce anxiety for some students due to the uncertain and unpredictable nature of the problem. This anxiety is a sign of cognitive disequilibrium experienced by students as they come to understand new concepts (Piaget, 1952). By presenting non-routine problems that require students to actively engage in mathematics (as opposed to mindlessly following procedures), worthwhile mathematical tasks represent mathematics as an “ongoing human activity” (NCTM, 2007, p. 33) and provide opportunities for students to make deep connections between mathematical ideas.

Other research has been conducted on the engagement potential of mathematical tasks. For example, English (1998) interviewed third-, fifth-, and seventh-grade students from classrooms implementing worthwhile mathematical tasks (i.e., reform-based practices) about their perceptions of the quality of different types of tasks posed in their classrooms. Overall, the students felt that interesting, meaningful, and relevant tasks provided them with the best learning experiences. They rated tasks as more engaging if the tasks involved deductive reasoning and provided some type of structural support for problem-solving (e.g., hints, diagrams). Students also rated spatial reasoning tasks and tasks based in a real-world context as more engaging overall. However, the perceived mathematical complexity of the problem seemed to have more influence on the students’ ratings of engagement than any of the previously identified factors. If the task seemed either too simple or too complex, students were reluctant to rate it as engaging. Together with Smith and Stein’s (1998) framework for levels of cognitive demand, these findings suggest that the effectiveness of mathematical tasks greatly depend on designing the task to reflect students’ interests and experiences, to provide sufficient representational support,

and to match the mathematical complexity to students' ability levels. Worthwhile mathematical tasks play a key role in the students' mathematical discussions and in the development of students' mathematical understandings and skills

### **Existing Empirical Research Related to Techno-Mathematical Discourse**

Research on the impact of technology in education has expanded over the past few decades. Technological developments constantly emerge presenting opportunities to improve classroom practices and learning. A great deal of research has been conducted in an attempt to verify the usefulness of such technologies. This synthesis of research findings focuses on the use of technology in elementary through high school classrooms as a representational tool for developing mathematical concepts. Major themes related to classroom discourse with technology will be discussed in three sections: (a) the impact of dynamic representations on the content and nature of mathematical discourse, (b) the impact of computer feedback on student collaborations, and (c) shifts in the teacher's role as facilitator of mathematical discourse.

**Impact of dynamic representations on classroom discourse.** Technology has the potential to produce dynamic representations of mathematics concepts. The dynamic nature of these representations has a profound impact on the level of classroom mathematical discourse. For example, Ares, Stroup, and Schademan (2008) describe a lesson using networked classroom technology—a wireless network of graphing calculators that collects students' solutions and displays them collectively on a screen at the front of the room. In this particular lesson, students used their calculators to “maneuver an elevator” by determining how many levels it would move up or down in one-second intervals. The collective resulting position-time graphs were then displayed on the front screen. Different tasks throughout the lesson gave specific parameters causing the students to focus on different mathematical relationships (e.g., end on the  $-2$  floor

using any combination of movements, the fourth movement must be to go up three floors). The researchers noted that the collective representation encouraged students to interact with each other and comment on the various solutions. Students focused on the mathematics represented dynamically on the visual display and used it as a basis for their mathematical discussions. Additionally, the visual display mediated a shift in the discourse from conceptual to more formal language (e.g., “they all go up at the same time” to “each line has the same slope, so they are all parallel to each other).

Similarly, Sinclair (2005) and González and Herbst (2009) each report on studies with dynamic interactive geometry software (Geometer’s Sketchpad and Cabri Geometry, respectively). In Sinclair’s (2005) study, students worked in pairs with Geometer’s Sketchpad to complete a sequence of tasks on proving congruency (e.g., applications of reflection and rotation). The dynamic nature of the software enabled the students to test conjectures and receive immediate feedback. Just as observed by Ares, Stroup, and Schademan (2008), the students in Sinclair’s (2005) study used the visual representations to fuel their mathematical discussions. However, these students displayed varying degrees of effectiveness in their discussions. As noted above, they engaged in productive discourse by explaining their thinking and asking thoughtful questions. But at other times, students’ discourse actually hindered the development of mathematical ideas. Due to this variation in productivity, Sinclair emphasizes the need for follow-up classroom sessions after time spent in the computer lab to solidify understanding and to ensure that all students have appropriate opportunities to learn the content.

González and Herbst (2009) report a more positive view of student discourse when working with dynamic interactive geometry software. Students in this study also completed a sequence of tasks to investigate congruency. However, instead of applying transformations (as in

the previous study) these tasks required them to experiment with midpoints and angles. The measuring and dragging features of the Cabri Geometry software enabled students to quickly and accurately assess the results of their experiments. The interactive features of the software tools supported all students' learning in the lesson. In whole-class discussions, advanced students described how they used the tools to prove their conjectures and pointed out new ideas. At the same time, other students who did not fully understand the technical terms for the geometrical relationships could still participate in discussions because of the support of the technological representations. Therefore, this study confirms previous findings (e.g., Ares et al., 2008; Sinclair, 2005) that interacting with dynamic representations enables and encourages students to talk deeply about mathematics.

**Impact of computer feedback on student collaborations.** As mentioned briefly in the previous section, the ability for technology to give dynamic feedback to students, either verbally or nonverbally, also contributes to the level of classroom mathematical discourse. Studies have shown that valuable visual feedback provided by graphing software programs, among other technologies, prompt productive problem-solving student discourse. For example, Gibbs (2006) documented students' attempts to graph particular quadratic functions with varying scales. When the computer-produced graph did not visually match the graphs students had previously drawn, discussions ensued regarding the discrepancies and how to reconcile them. Likewise, other studies report positive effects on problem-solving discussions as a result of feedback from dynamic computer diagrams. (González & Herbst, 2009; White, 2006).

More recently, Evans, Feenstra, Ryon, & McNeill (2011) conducted a study comparing effects of virtual and physical tangram puzzles on student discourse. Using a multimodal approach (speech, gesture, gaze, and actions) to analyze the discourse of 7- to 8-year-old

children, the researchers identified more co-references (i.e., shared reference points) among the students when using the virtual manipulative tangrams. They determined that discourses associated with the virtual manipulatives tended to be of more collaborative nature, perhaps due to a forced focus on a common screen and having to negotiate control of the mouse. However, students using the physical tangram pieces had the option to handle the pieces individually without permission from the rest of the group. The focus on a common display to promote active mathematical discourse aligns with previous findings (Ares et al., 2008; White, 2006).

**Shifts in teacher's role as facilitator of mathematical discourse.** With the addition of technology to the classroom environment, the role of the teacher in facilitating mathematical discourse shifts slightly. During whole-class discussions, the teacher becomes responsible for orchestrating students' interactions with the technology as well as interactions with each other (Ares et al., 2008; González & Herbst, 2009). Furthermore, the teacher's modeling of appropriate discourse practices becomes even more imperative as students work in small-group collaborations on the computers (Sinclair, 2005; White, 2006). During these small-group collaboration sessions, the teacher's roles of intervening when necessary (Baxter & Williams, 2010), and questioning to extend students' thinking (e.g., Brodie, 2011; Gibbs, 2006; Hufferd-Ackles, Fuson, & Sherin, 2004; Piccolo et al., 2008) become even more imperative as students work with dynamic technological representations.

### **Summary of Research on Techno-Mathematical Discourse**

The research on the impact of technology on classroom mathematical discussions begins to shed light on how particular technologies influence students' mathematical discussions and the development of mathematical understanding. Most of the studies in this area have examined a single technology tool (e.g., networked graphing calculators, Geometer's Sketchpad, Cabri

Geometry) and have been conducted with secondary students in a small number of classrooms. These studies used a variety of methods and analysis, including case studies (Gibbs, 2006; Sinclair, 2005), a discourse analysis (Gonzalez & Herbst, 2009), and a mixed methods micro-genetic analysis (Ares et al., 2008; see Siegler, 2006). Only one study (Evans et al., 2011) employed an experimental design and examined elementary students' discussions while using different types of tools (e.g., virtual tangrams compared to physical tangrams). The Techno-Mathematical Discourse Framework provides a way to examine variations in factors related to how students interact with each other and with technology in mathematics classrooms. For example, research can examine the influence on Techno-Mathematical Discourse of (a) different discourse formats (e.g., whole-class, small-group), (b) various types of technology tools (e.g., different types of virtual manipulatives), and (c) various types of mathematical tasks used in classroom instruction (e.g., non-routine, problem-solving, practice). More research on the effects of these variables will strengthen the knowledge base in this field of research.

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Breaking Barriers: Using Media Literacy To Support Diversity and Student  
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**Abstract**

Media literacy, when used with a wide variety of modes and genres, can function as a unifying component that works as a springboard to address diversity in the classroom and to rebalance the power structures between students and teachers that often arises as the result of cultural, political, and ideological conflict. This Presentation will explore how the incorporation of media literacy can serve as a connector between the academic, social, and cultural experiences both students and teachers bring to the classroom.



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# Comprehensibility judgments of L2 speeches with different L1-based accents

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## 0. Introduction

With the advent of globalization in recent decades, interactions between individuals who speak different first languages (L1s) have been increasing. These interactions can be either between a *native speaker* and a *non-native speaker* of a given language of interaction (NS–NNS) or between non-native speakers (NNS–NNS). The involvement of non-native speakers in communicative interactions means that their utterances may have features derived from the phonetic and phonological characteristics of their L1, that is, may be delivered in different *foreign accents*. These accents can be a potential obstacle to the clear perception and understanding of the utterances. This is particularly true in interactions between non-native speakers, with no native speaker involved. Although good perception and understanding of an interlocutor's utterance is a fundamental requirement in successful communication, little is known about how foreign accents affect listeners' comprehension (particularly that of non-native listeners).

The present study is a part of a larger research project that aims to examine the potential influences of foreign accents on L2 speech comprehension. Research on the comprehension of accented speech in the fields of second language acquisition and applied linguistics has been so far limited to NS–NNS interactions, and more specifically to the effects of foreign accents on native speakers' comprehension. In contrast, much less has been done to look at how different foreign accents—that is, the accents of people with different L1s when speaking an L2—affect the comprehension of those learners' utterances by L2 learners with another L1. The ultimate goal of the project is to reveal which characteristics of accented speech cause difficulty for perception and understanding in NNS–NNS interactions. As an initial phase, we

conducted a questionnaire survey on how much difficulty a particular language learner group (here, Japanese learners of English) feels in understanding accented L2 English speech from speakers with a variety of L1 accents.

## 1. Previous Studies

In the studies examining the influence of foreign accent on speech comprehension, three aspects of foreign accents are often focused on (Derwing & Munro, 2005). *Intelligibility* is the extent to which a listener actually understands an utterance, often measured by a dictation/transcription task using accented speech samples. *Accentedness* is a listener's subjective evaluation of how different a speaker's accent is from that of a L1 speaker. *Comprehensibility* is the listener's subjective evaluation of how easy or difficult a particular utterance is to understand. The latter two aspects are often measured by scalar judgments of accented L2 speech.

As mentioned above, previous research on the effect of foreign accents has mainly focused on the perception of non-native speech by native speakers. For instance, Munro and Derwing (1995a) conducted a study in which they asked 18 native speakers of English to transcribe and make judgments on the comprehensibility and accentedness of L2 English speech by 10 Mandarin-L1 speakers. They found that while the native speakers judged some of the L2 utterances to be heavily accented, the perceived accentedness did not necessarily affect their transcription performance or their comprehensibility ratings of the Mandarin speakers. (The transcriptions in question were orthographic transcriptions by people with no special linguistic training, not phonetic transcriptions.) Isaacs and Trofimovich (2012) analyzed the correlations between 19 measures of L2 speech (ranging from phonetic to discourse-level measures) and native speakers' comprehensibility ratings, examining how the linguistic characteristics of the L2 speech affected comprehensibility from the perspective of the listener. The results of the correlational analyses, together with introspective reports from three ESL teachers, showed that five of the speech measures could be considered influential. *Word stress* errors differentiated the comprehensibility ratings of L2 speeches across all three levels of L2 proficiency. *Lexical richness* (type frequency) and a measure of fluency (*mean length of run*) distinguished the lower level learners from others, while *grammatical accuracy* and a discourse-level measure, *story breadth*, separated high-proficiency learners from others.

In contrast to the above work with native listeners, only a few studies have examined L2 learners' perception of accented speech. Tara, Yanagisawa, and Oshima

(2010) compared the listening performance of two groups of Japanese learners of English, of different proficiency levels. The participants listened to a series of English passages spoken with either a Received Pronunciation or a strong Hebrew accent, and answered multiple-choice questions accompanying the passages. The results indicated that regardless of the learners' proficiency level, Hebrew accents negatively affected the speakers' intelligibility scores. In a similar vein, Munro, Derwing and Morton (2006) investigated how listeners' L1 backgrounds affect the intelligibility and comprehensibility of accented speech as perceived by them. Listeners from native Cantonese, Japanese, Mandarin, and English backgrounds rated accented English speeches from native speakers of Cantonese, Japanese, Polish, and Spanish. The results showed that listeners from different L1 backgrounds tended broadly to agree on the comprehensibility of the accented speeches. They also showed that comprehension among the Japanese listeners was helped a little by their own accent, while no such benefit was evident for the Cantonese listeners. They concluded that the properties of an accented utterance itself, rather than listeners' language background, may be the key in L2 speech perception.

Yuan, Jiang, and Song (2010) conducted a rating study to examine how L2 utterances delivered in the accents of different L1s affect listeners' perception of the accentedness of the speech. Eight Chinese learners of English who spoke it at a near-native level judged the accentedness of English speeches produced by L2 English speakers with eight different L1s, taken from a large database of English speech samples spoken by individuals with different L1s (CSLU Foreign Accented English Corpus; Lander, 2007). The Chinese learners' ratings of accentedness were then compared with accentedness ratings provided for the same speeches by three native English speakers. The overall results indicated that the Chinese learners were less sensitive to foreign accent, though the ratings of the English native speakers and the Chinese learners were correlated. One particularly important finding is that the Chinese learners found utterances spoken by individuals with particular L1 backgrounds more heavily accented than those by speakers of other L1s. Specifically, English utterances with Cantonese and Mandarin accents were judged less accented than those with Japanese, German, and Vietnamese accents, which in turn were judged less accented than utterances with French, Spanish, and Russian accents. Given that the accent heaviness of the selected speech samples as judged by the native English speakers was the same across L1s, these results suggest that foreign accents derived from different L1s may have different degrees of impact on L2 learners' perception and judgment of accented speech.

As shown by the studies cited above, there is some evidence that foreign accents affect various aspects of L2 speech comprehension by L2 learners, and further research is needed to better understand these influences. Of particular interest and value will be comparative investigation of the effect of foreign accents derived from different L1s. It is possible that foreign speeches with the same degree of accentedness (based on native speakers' judgments) will have different impacts on L2 speech perception if they come from different languages (with their various phonetic and phonological characteristics). Yuan, Jiang, and Song (2010) showed that this is indeed the case in the matter of judgment of the heaviness of accents. It is an open question at this stage whether or how foreign accents derived from different L1s affect measures of the comprehensibility and intelligibility of L2 utterances.

To address this open question, we conducted a questionnaire survey asking low-level Japanese learners of L2 English to listen to a series of accented English speeches from speakers of various L1 backgrounds and to judge their comprehensibility. As well as addressing the issue of the effects of different L1-based accents on L2 speech comprehension, the results of the survey are expected to serve as an empirical basis for later investigation into which characteristics of foreign accents cause particular difficulty for perception and understanding by non-native speakers.

## 2. The Present Study

### 2.1 Participants

A total of 103 Japanese learners of English participated in the questionnaire survey. The English proficiency of the participants was considered low, based on the results of the Oxford Quick Placement Test (Oxford University Press, 2004), which put them in a range from A1 to B1 on the Common European Framework of Reference (CEFR). Data from 22 participants were removed from the subsequent analyses, for any of the following reasons: a) failing to answer one or more questions, b) providing multiple answers for one or more questions, c) self-reported lack of concentration during the task, or d) self-report of having lived in an English-speaking country for more than one month.

### 2.2 Materials

The speech samples were taken from the CSLU Foreign Accented English Corpus (Lander, 2007), the same database used in Yuan, Jiang, and Song (2010). A total of 36 speech files from speakers of six different L1s (six speech files each for Arabic, Indonesian, Japanese, Korean, Mandarin, and Vietnamese) were selected. Half of the

speech files were judged strongly accented and the other half weakly accented, based on the average of three native speakers' ratings on the four-point scale of accentedness contained in the database (with an overall average of 3 for the strongly accented speeches and 2.33 for the weakly accented speeches). In each speech file, the speaker talks about himself/herself for up to 20 seconds in the form of leaving a message on an answering machine. For files that ended abruptly in the middle of the speech, the first author cut the last part of the file (not more than three seconds) so that the speech would end naturally.

### 2.3 Procedures

The questionnaire survey was conducted in university classes taught by the second author. The participants were asked to listen to a series of speeches and make a judgment as to how easy or difficult each speech was to understand on a nine-point Likert-type scale (1 = *very easy to understand*; 9 = *very difficult to understand*). The task started with a brief explanation of the research project, the task itself, and some ethical matters related to participation in the survey. After completing three practice items and confirming that they understood the procedure, the participants listened to 48 speech samples in total, presented in a randomized order (Japanese speech samples were repeated three times to check the consistency of participant judgments). To avoid order effects, two sets of speech samples were prepared, in opposite order. Between each pair of samples, there was a 10-second blank, during which participants were instructed to mark down their judgments. After completing half of the items, they took a few minutes' break. Finally, the participants were also asked to write open-ended comments about the task (e.g., their own criteria for ease or difficulty of perception and/or comprehension of the L2 speeches) at the end of the survey. Overall, it took about 30 minutes to complete the task.

## 3. Results

Table 1 shows average comprehensibility rating scores by accent thickness (strong vs. weak) and by the speaker's L1.

Table 1

*Mean Comprehensibility Ratings and Standard Deviations by Accent Level and L1*

	Mandarin	Japanese	Korean	Indonesian	Arabic	Vietnamese
Weak Accent	4.13 (1.89)	4.97 (1.50)	4.52 (1.96)	5.26 (1.74)	5.65 (1.69)	6.26 (1.52)
Strong Accent	4.75 (1.75)	4.04 (1.98)	4.89 (1.85)	5.33 (1.78)	6.03 (1.64)	6.06 (1.62)
Difference	0.62	-0.93	0.37	0.07	0.38	-0.20

*Note.* The figures in the parentheses are the standard deviation values. Difference = Strong Accent – Weak Accent.

The rating data were subjected to a two-way ANOVA with L1 and Accent Level as the within-participant factors. As the L1 effect and the L1 x Accent Level interaction violated the sphericity assumption, corrected F-values are reported. The main effect of L1 was significant,  $F(3.28, 262.58) = 67.33, p < .001, \eta^2 = .124$ , while the main effect of Accent Level was not,  $F(1, 80) = 0.56, n.s., \eta^2 = .000$ . The interaction between L1 and Accent Level was also significant,  $F(4.39, 351.39) = 14.50, p < .001, \eta^2 = .019$ .

Subsequent analysis of the simple effects showed that the effect of Accent Level was random. As shown in Table 1, speeches with weaker Mandarin, Korean, and Arabic accents (based on the native speaker judgments of accentedness) were judged more comprehensible than those with stronger accents. The trend was opposite, however, for speeches with Japanese and Vietnamese accents. For speeches with Indonesian accents, the participants found little difference in terms of the difficulty of comprehension.

In contrast, the effect of L1 was clearer. Regardless of accent level, speeches with accents based in particular L1s were judged more comprehensible than those with accents derived from other L1s. More specifically, the present participants (Japanese learners of English with a low proficiency level) found speeches in Mandarin, Japanese, and Korean accents easier to comprehend than those in Arabic and Vietnamese accents, and Indonesian-accented speeches came in between.

#### 4. Discussion and Conclusion

The present study attempted to examine the effects of accents based in different first languages on second-language speech comprehension. One major finding of the questionnaire survey administered is that the participants (Japanese learners of English) found utterances in some foreign accents more difficult than those in other foreign accents, almost regardless of the strength of the accents. For the Japanese learners, English speeches spoken in the accent of their native language (Japanese) were highly comprehensible (cf. the *interlanguage speech intelligibility benefit*: Bent and Bradlow,

2003). They also found English speeches containing accents from languages used in countries geographically close to Japan (Mandarin and Korean) as comprehensible as the Japanese-accented speeches. Also notable is that with the Japanese-accented speeches, Japanese learners judged more heavily accented speeches to be more comprehensible than less-accented ones. The exact causes of this language effect are not clear from the results of the survey. It might be that Japanese learners are more familiar with English utterances spoken by Japanese and other East Asian people than those by people in other parts of the world simply because they are more frequently available for the community of Japanese learners. Our tentative conclusion at this stage is that speakers' L1s have effects on L2 speech perception that are no less strong than the effects of degrees of accentedness.

As mentioned above, the results of the present survey provide an empirical basis for investigation into which characteristics of foreign accents cause particular difficulty in the perception and understanding of accented L2 speeches by non-native speakers. Together with what we have learned from previous studies, such as Munro, Derwing, and Morton (2006), we now know that L2 learners generally find speeches by other learners with the same L1 more comprehensible. One unique finding from our survey is that learner comprehension of L2 speeches containing accents from languages other than the listener's L1 varies to a certain degree as a function of the speaker's L1s. Future studies will address why this happens by examining the effects of individual accent characteristics using more fine-tuned measures like reaction time (Munro & Derwing, 1995b).

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# Mobile Devices and Apps for Extension Education

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## Abstract

Land grant universities provide information and educational programs to clientele, including the general public, farmers, and homeowners. Typically, this has been done through conferences, grower meetings, commodity meetings, field days, extension bulletins, and websites. With the changing technology in communications, mobile devices have become crucial tools for disseminating information. The objective of this paper is to describe some of the ways tablets, smartphones, and apps are used in extension education.

Keynote is an iPhone/iPad/iPod touch app to create and deliver oral presentations. With the Keynote Remote app, an iPhone or iPod touch can be used as a remote control to control a Keynote presentation running on an iPad. Zapd, an iOS app website builder, was used to create the mobile website "Micro-hydroponics" about noncirculating hydroponic vegetable systems. RSS news readers and news aggregator apps (Feedly, Pulse, and Zite) help find articles, websites, and videos about cutting edge technological developments in horticulture which are disseminated to extension personnel and clientele. Mind mapping apps (SimpleMind+) create mind maps of the topics that will be covered in a presentation. Through demonstrations and hands-on activities, clientele learn about QR (quick response) codes and generate them using websites (TAG.CX) or mobile apps (QRS+). Clientele used mobile devices with QR code readers (i-nigma) to scan QR codes to get relevant information to supplement discussions. In conclusion, the use of mobile devices for extension education is expected to continue to expand rapidly in the foreseeable future as extension personnel and clientele obtain mobile devices, apps, and receive training.

## Introduction

Mobile devices, such as smartphones and tablet computers (tablets), are increasingly being used to complement the use of laptops and desktop computers. In some instances, mobile devices are replacing computers for specific tasks.

Their small size makes these handheld mobile devices portable and convenient to carry and use. They are powerful, have an array of software, and their touch screen makes them easy to use.

Mobile apps (applications) are software that run on mobile devices such as smartphones and tablet computers. There are over 868,000 apps available for download in the US App Store (Apple Inc.) (148Apps.biz, 2013) for iOS devices, covering a gamut of topics. Many apps are free, whereas others have a cost associated with them.

With the rising importance of mobile devices in everyday life, we are also seeing their expanding use in agriculture and horticulture (Cunha et al., 2010; Delgado et al., 2013). The diverse range of software applications for these devices make them powerful tools for education (Hlodan, 2010), extension (Drill, 2012), and research activities (Young, 2011).

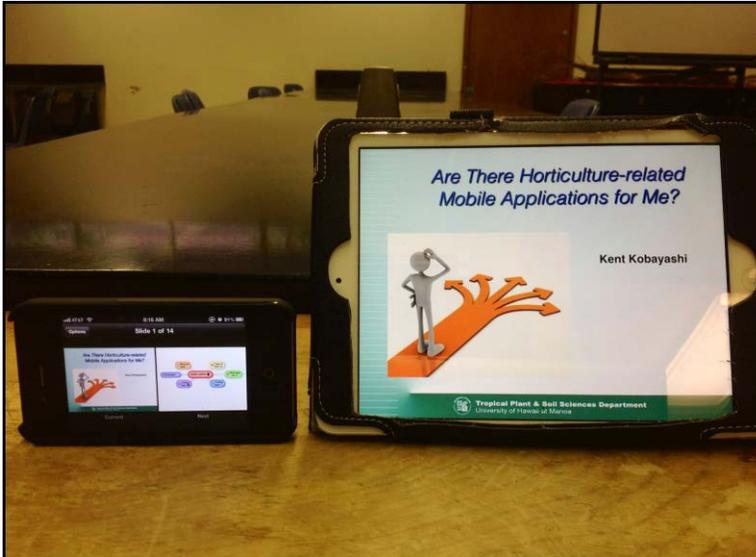
Land grant universities provide information and educational programs to clientele, including the general public, farmers, and homeowners. Typically, this has been done through conferences, grower meetings, commodity meetings, field days, extension bulletins, and websites. With the changing technology in communications, mobile devices have become crucial tools for disseminating information. The objective of this paper is to describe some of the ways tablets, smartphones, and apps are used in extension education.

### **Keynote and Keynote Remote**

Similar to Microsoft PowerPoint, Keynote is an Apple software for creating presentations. It is available as mobile apps, enabling the iPhone and iPad to also create presentations. Using an iPhone, iPad, or iPad mini for presentations is convenient due to the light weight and ease in holding and carrying these devices during a presentation. This allows the instructor to walk around the classroom, facilitating mingling among the students and increasing teacher-student interaction. The mobile devices are connected to a projector via an adapter and a VGA cable.

Another method for presentations is to the use of Apple TV, a digital media device that allows using a projector to show presentations on an iPad. The projector and iPad are linked wirelessly using AirPlay. In addition, a software such as Reflector, which runs on a Macintosh laptop, can be used for presentations if an Apple TV device is not available. The laptop is connected to the projector via a VGA cable. Using AirPlay, the iPad is wirelessly connected to the laptop, and what appears on the iPad then appears on the laptop and projector.

Keynote Remote is a mobile app that can be used on an iPhone to enable it to be used as a Bluetooth remote control unit for an iPad. The iPad is set up to run the Keynote presentation. The iPhone is used as a remote control (Figure 1).



**Figure 1.** Using an iPhone, running the Keynote Remote app, to control a Keynote presentation on an iPad. Swiping the iPhone screen advances the slide. Note: a preview of the next slide can be seen on the iPhone.

### **Website builder apps**

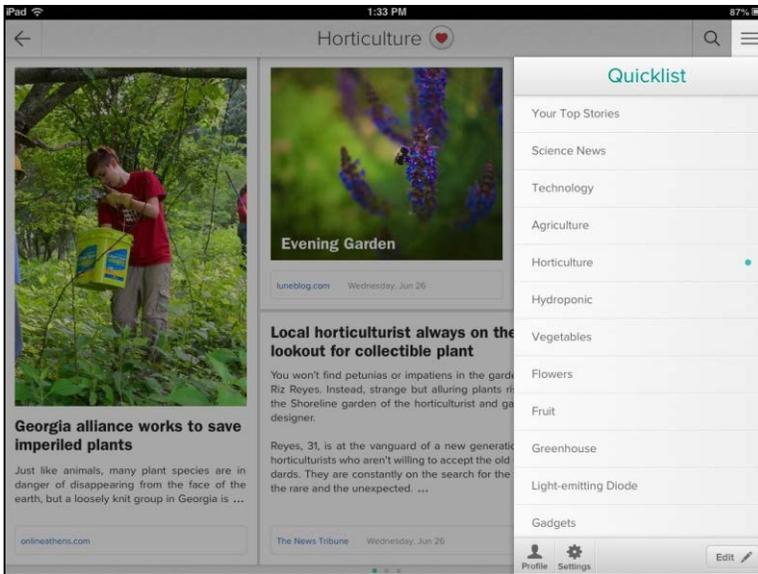
Zapd is a website builder app for creating webpages. Using an iPhone or an iPad, you can easily create a webpage by simply inserting text, images (photographs), and links (Figure 2). Other web creator apps include Weebly and Simpl.



**Figure 2.** A webpage created using the iPhone/iPad app Zapd. Text, photographs, and links are easily added to the webpage.

### **RSS news readers and news aggregators**

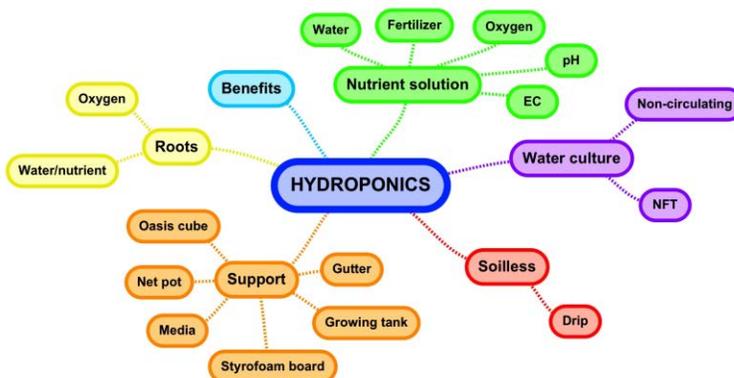
RSS (Really Simple Syndication) news readers and news aggregators are applications that can collect news articles and videos from multiple news sources and deliver them into one location for easy viewing. It eliminates the need to search the Web for specific websites to obtain news. Examples of RSS news readers and news aggregators include Feedly, Pulse, and Zite (Figure 3).



**Figure 3.** Zite news aggregator app evaluates news stories that match your interests, in this example, "horticulture". It then delivers them automatically to your iPhone or iPad.

## Mind Mapping

Mind mapping is a technique for organizing thoughts, ideas, and relationships. It starts from a central idea or topic and branches out like a spider web to related subtopics (Figure 4). Mobile mind mapping apps enable the creation of mind maps on iPhones and iPads. Mind mapping apps include iMindMap and SimpleMind+.



**Figure 4.** Mind map on hydroponics created using the iPhone/iPad app SimpleMind+. Presenting such a mind map previews a presentation for the audience.

## QR Codes

Mobile apps can be used to create and scan QR (quick response) codes (Figure 5). Scanning of QR codes provides information to the user including web links (URLs, Uniform Resource Locators), contact information, additional relevant information, text messages, and e-mail. There are many mobile apps for scanning QR codes such as i-nigma QR Code reader, QRS+ code generator/scanner, Norton Snap QR code reader, and Microsoft Tag.



**Figure 5.** QR (quick response) codes can be created and scanned using iPhone/iPad apps. When QR codes are scanned, they provide pertinent information such as links to websites, contact information, additional relevant information, and text messages.

## Conclusion

This article was limited in its scope to Apple (iPhone, Pad, and iPod Touch) products. There are also extension education related apps for other brands of smartphones and tablet computers with different operating systems such as Android and Windows 8 that were not covered in this article. The use of mobile devices for extension education is expected to continue to expand rapidly in the foreseeable future as extension personnel and clientele obtain mobile devices, apps, and receive training.

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**1. Title of the submission.**

The Myth of Universality?: The Philosophical Dilemma of Science and its Impact on Science-Education

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**The Myth of Universality?: The Philosophical Dilemma of Science and  
its Impact on Science-Education**

**Section 1: Introduction- A Philosophical Eclecticism?**

*Eclecticism is self-defeating not because there is only one direction in which it is useful to move, but because there are so many: it is necessary to choose". (Geertz, 1973, p. 5)*

## **Aim of the Paper**

I suggest that a reformed science-education may help to align society's disinterest in science more closely to its fascination with scientific-products. Within an aim of scientific-literacy, the curriculum for such a science-education should represent the character of science as both interpretive and experimental, and foster an understanding of both the standard account of science as well as science(s) indigenous to the pupils being instructed.

## **The Issue**

A growing disinterest in scientific-study and scientific-careers is being blamed on the way in which science is taught (Burnsed, 2011; Gay, 2002; Mitchell & Hoff, 2006; Wolff-Michael & Lee, 2004). In stark contrast to this expanding disinterest, science's epistemological hardiness and reliability, as well as its immense contribution to humankind's development, allows it to still enjoy a hegemonic status (Carter, 2008, p. 175). Certainly, societies are increasingly charmed with products of science, many of which have become cultural staples.

## **The Theoretical Framework of this Paper**

In attempting to account for this contradiction of a world seemingly disenchanted with science education and careers yet enamoured by its products, I have invoked Geertz' proposition of two sciences: "...an experimental science in search of law...[and] an interpretive one in search of meaning" (1973, p. 5). This was Geertz' explanation to

describe anthropology's shift from the dominant use of positivist methodologies such as behaviourism, towards relativist methodologies which suggested that persons create meaning from their enmeshment within symbolic webs of significance often inherited through history (Geertz, 1973, p. 5). Geertz' two sciences then can be succinctly represented as a positivist-experimental vs a relativist-interpretivist position

Earlier, in 1959, Snow had proposed two cultures which Hess later (1993 as cited in Franklin, 1995, p. 165) aligned to the character of Geertz' two sciences. Snow's two cultures are indicated as "literary intellectuals at one pole-at the other scientists, and as the most representative, the physical scientists"(Snow, p. 169). For sure, physical scientists have long been considered positivists whilst literary intellectuals are often considered as relativists (Berg, 2004, p. 2&7; Tomal, 2010, p. 3). Interestingly, Geertz has described this dichotomy of positivist-relativist positions in terms of two "sciences": a term normally associated with positivist methodologies. In contrast, Snow has done so as two "cultures": a term generally associated with interpretivist viewpoints thought discordant to positivist thinking. The argument itself then, is also framed in positivist-interpretivist terms.

I am suggesting that this positivist-relativist dichotomy is embedded too within scientific-philosophy and lies at the root of the inarticulation between society's high interest in scientific-product as compared to its low interest in scientific study and careers. Whether defined in terms of cultures or sciences, Snively and Corsiglia (2001) support that this positivist-relativist dichotomy is really about "the nature of reality and knowledge, [and] definitions of science" (p.7).

Positivist philosophy suggests a fixed, and universal reality or world, measurable through the collection of empirical data, (often in quantitative forms). Such data can be used to generate theories, or “explanations as regularities” (Jones, 2011, p. 202), about the way the world works. These theories can be later applied to predict and control systems towards the development of specific products, technologies, or outcomes. Processes are not important here since “to be able to ‘drive’ the system does not require understanding how the ‘engine’ works...[it is facilitated by] an instrumentalist rationality, whereby scientific thinking itself has become an ideology; the ends justifying the means” (Jones, p. 202).

Relativism has long been thought to stand opposite to positivism, and uses qualitative inquiry to interpret and represent the meanings that individuals construct as they interact with the world about them (Merriam, 2002, pp. 3-4). These meanings are determined as “inhabitants make sense of their surroundings through symbols, rituals, social structures, social roles and so forth” (Berg, 2004, p. 7).

This essay aligns an ‘experimental-science’ more closely to a positivist view or the utilization of science as *theories, products or technologies*. Note that technology in modern spaces is often thought to be digital. Within this essay though technology refers to the historic meaning, in which science is applied to make some useful product, which may not necessarily be digital. An ‘interpretive-science’ I align closely to qualitative methodologies and the *process* by which scientific experimentation occurs, how science makes meaning as it comes to know, and how it acculturates others into those methods.

Notably, the essay draws harsh lines between interpretivist and experimental science

really only to facilitate the ease of the discussion. It is deeply appreciated that these two sciences are entwined along a continuum and may be occurring simultaneously at many times in the scientific-endeavour.

### **Summarising the Purposes of this Paper**

The seeming contradiction between society's disinterest in science-education as compared to its high interest in the products of science may simply therefore be a manifestation of the philosophical condition of science. Certainly, little headway has been made in settling the relativist-positivist divide existing at science's philosophical-core. Franklin (1995) suggests that generally, "no one has provided the social engineering to bridge the [relativist-positivist] gap more than sporadically in the interim, confirming the tenacity of an opposition" (p.166). In the absence of a truce, the dichotomy of interpretivism and positivism appear to have been separately, and possibly unwittingly, embraced within different spheres of the scientific-enterprise. For instance, even though the research process of science may be prevalently interpretive, science-as-experiment might dominate the societal-mind because of society's avid use of technological products.

The outcome of this battle seems to result in an array of numerous sciences defined at various points along the philosophical continuum between the positivist-interpretivist poles: with scientists in each camp defending that point, and the lay-people with scientific-literacies insufficient to make sense of the battle caught unwittingly in-between. On such a playing field, I disagree with the assertion of Geertz (Geertz, 1973,

p.5) quoted at the start of this section: in this situation at least, eclecticism might *not* be self-defeating. An eclecticism where the personalities of interpretive-science and experimental-science openly co-exist, their individual contributions to the nature of science and the scientific endeavour recognised, accepted and harnessed, might help to begin to resolve these contradictions. A science-pedagogy recognising the character of science as both experimental and interpretivist might help to produce a society with stronger scientific-literacy, more aware of the capabilities of science, more realistic in their demands of science, more demanding in the levels of accountability to which science is held, and generally demonstrating more interest in science and its endeavours. Moreover, an interpretivist-science resists an exclusionary, standard account of science by welcoming the cultural ways of doing science and coming-to-know, to which students under tutelage are enculturated in their communal lives.

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Title: Advising for the Online Student

Topic Area: Advising and Distance Education

Presentation format: Panel Session

Description: This session will be an opportunity for participants to learn about one advising system developed for online learners. The presenters will first discuss the elements of an online advising system for online students in our department. The second part of the session will focus on an open discussion among participants to discuss best practices of advising online learners.

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## ABSTRACT

With the growth of online education, a new and growing population of students need academic advising. Unlike a traditional student on a residential campus who has ready access to an advisor, many adult learners use online courses and programs to restart their education. As such, these online learners initially need advising on the direction of their education, what options are available in their education, and transferability of their previous credits (Steele, 2005). After acceptance into an online program, these online learners need effective advising that leads to successful degree completion.

A well-known, but complicated critical component of success for online students includes support services—such as advising (Ludwig-Hardman & Dunlap, 2003). Providing effective advising to online students can be problematic for many reasons. Online students expect to have a timely response to their questions and concerns; it is easier for advisors to procrastinate in answering a student's question through e-mail or telephone when there is no physical presence of the student (Lorenzetti, 2004). Additionally, online students can feel isolated and alone (Angelino et. al, 2007); and without classmate chatter about upcoming advising appointments and enrollment dates, they can easily miss crucial deadlines. Because the advisor may be the only consistent point of contact between the online learner and the institution, institutions need to explore how advising is factored into the overall degree experience (Lorenzetti, 2004; Morris & Miller, 2007).

A key strategy to reduce stress and isolation in online learners is active communication initiated by the institution (Lorenzetti, 2004). The ITAM Department at Central Washington University has devised a system of central advising from their home campus to ensure online learners have all the information available to them for successful degree completion. This centralized advising begins with helping online learners identify their readiness for online learning; online learners also receive time management advice; counsel on continuation of their program; quarterly schedules and program course flow, and assistance with technology.

In addition to this centralized advising system, each online learner is assigned a personal advisor. Because the online learner has access to the centralized advising

system 24/7, individual time with the assigned advisor can be more productive in the areas of career guidance and personal issues related to successful degree completion.

The first part of this interactive and engaging session will be spent on learning the mechanics of the central advising system and personal advising that online students receive through our department. The second part of this session will be opened to participants to discuss best practices of advising online learners.

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Title: Best Practices for Departmental Roles in Online Class Retention

Topic Area: Higher Education and Distance Education

Presentation Format: Panel Session

Description: While much research addresses specific pedagogical techniques for online course retention, this panel session will explore some of the reasons for lowered retention rates in online classes at the departmental level and provide specific departmental strategies which can be easily implemented for greater student success in the online class environment.

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## ABSTRACT

While much research has been published on effectiveness of online classes, online class pedagogy, and other class specific tools, little research has addressed department best practices when offering online classes or fully online programs.

From the department perspective, effectiveness in online classes is important to retention rates within the department. Student retention rates in online classes has been one of the greatest weaknesses in online education (Carr, 2000; O'Brien & Renner, 2002). Attrition rates for online classes tend to be 20 percent higher than those of traditional classrooms (Frankola, 2001; Diaz, 2002). Chief Academic Officers at all types of institutions believe that lower retention rates for online courses are a barrier to the wide-spread adoption of online education (The Sloan Consortium, 2012). Despite these lower retention rates, 3.9 million students took an online course in 2007 (Allen & Seaman, 2008), while over 6.7 million students took at least one online course during fall 2011. As a result, we believe it is the job of departments, not only individual faculty, to determine strategies to manage retention rates.

Gibson (1998) reported three categorical factors to explain attrition in online courses: student factors (i.e. motivation, persistence attributes), situational factors (i.e. family and employer support, life changes), and educational system factors (quality of instructional materials, difficulty, and tutorial support. While two of these factors have little to do with the course, the last factor, educational system factors, is what we will address in this panel session. Since extensive research has been reported on how to create an effective online course, we believe there are educational system factors related to individual departments that can be addressed to alleviate retention issues.

In the Information Technology and Administrative Management Department at Central Washington University, a number of best practices have been put into place to increase students understanding of their online class, allowing the student to spend less time figuring out the class and more time focused on the material.

In this panel discussion we will demonstrate and discuss the use of master courses, training and mentoring of non-tenure track faculty, templates used in our LMS system, and the use of master syllabi and department banners. We believe these departmental-based methods increase students' ability to quickly familiarize themselves with their online class, resulting in greater online class student success. The last part of the session will be a focused participant discussion on methods their departments use to address student retention challenges in online classes.

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## Abstract

Title of the Submission: The Relationship Between Fitness and Motivation to Learn Among College Students

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Topic area of the submission: Health Education

Presentation Format: Paper Session

Abstract: This paper examines the relationship between fitness habits of college students and their motivation to learn. In the K-12 setting, the literature review regarding this topic demonstrates mixed results, with most studies indicating a strong relationship between the two. In this study, data from 256 college students were collected to determine if the students' scores on the motivation to learn inventory differed based upon the hours of fitness that they engaged in per week. The self-reporting method of data collection from the participants in this study produced a statistically significant ( $P = .03$ ) but weak correlation between fitness habits and motivation to learn (Pearson  $R = .14$ ). Thus, raising questions about the relative weakness of the relationship between the variables themselves for college students when compared to the stronger relationship between the variables for students in high school. Secondly, from a wellness practitioner perspective, questions about what additional curricular content or wellness opportunities might be needed to increase intrinsic motivation for fitness participation, to match, generally speaking, a college students' known desire to learn in the classroom.

## The Relationship Between Fitness and Motivation to Learn Among College Students

The relationship between Physical Fitness and Motivation to Learn has been discussed since the 1980's. While most research has been conducted in the K-12 setting, there is a growing interest in trying to understand the decreased levels of physical activity among college students. In high school, 91% of students report regular vigorous or moderate physical activity. In college, that number decreases to 58% (Douglass). In American high schools, since budgetary considerations have caused school districts to cut physical education program hours in K-12 education, certain research professionals in the field have questioned the value of such cuts, and have researched the link between physical education, academic achievement, and motivation to learn. Such researchers have reasoned that if there is a strong relationship between the level of physical fitness and academic achievement, then it does not make sense to cut such programs, as academic achievement and motivation to learn would be negatively affected. What this group of researchers discovered (Grissom, 2005) was a positive relationship between the level of physical fitness and academic achievement at the K-12 level.

In this study, we will investigate whether a relationship exists between motivation to learn and physical fitness among undergraduate college students at a public university in the Southern United States. Generally speaking, the study doesn't intend to prescribe a specific form of exercise, or make a determination regarding the type of exercise that is reported by the students, but, first and foremost, as a research question, to determine whether the students' anticipated decreased fitness activity level can be strongly correlated to a decrease in their motivation to learn as a college student. If the answer to the research question is yes, then, that would inform the researcher to argue in a similar fashion as the proponents of high school physical educators do when making the case for retaining physical education courses. However, if the answer to the research question is no, that is, there is not a strong correlation between motivation to learn and fitness activity level, then, the university level physical educator must still look for ways to engage the college student in wellness activities for their own sake.

## Literature Review

To solidify that high school students desire to learn and physical fitness levels are strongly related to each other, Grissom (Grissom, 2005) conducted research with 884,715 fifth, seventh, and ninth graders comparing their fitness standards of aerobic capacity using the Fitnessgram test with their SAT scores on reading and mathematic achievement. Analysis of variance between groups showed that reading and math scores improved significantly as the physical fitness scores increased. In another study, released by the Texas Education Agency in January 2009, the state's 2.4 million students in grades 3-12 were evaluated on the relationship between physical fitness and academic achievement. Fitnessgram tests results were compared to results of the same students on state academic achievement tests across several grades. It was determined that physically fit students were more likely to do well on academic achievement tests, have good attendance, and fewer disciplinary referrals.

With regard to college aged students, researchers estimate (Stevenson, Lochbaum, 2008) that over 50% of the adult population in the United States do not engage in the recommended levels of physical activity. As practitioners look for ways to engage college students in healthy lifelong fitness habits, and lifestyles, Stevenson found that the mastery approach goal orientation significantly mediates sense of competence ( $r=.41$ ,  $p<.05$ ) on leisure time exercise autonomy ( $r=.55$ ,  $p<.05$ ). Just how practitioners create opportunities for college students to be more intrinsically motivated, and have a mastery goal orientation is a matter of discussion. One suggestion (Kilpatrick, 2004) is to expand the focus of curriculum and fitness planners to have lifetime physical activity interventions that include recreational sport activities in their offerings. For example, Kilpatrick's study has shown that female students engage in physical activity for differing reasons. When offerings are limited (students are given exercise program opportunities exclusively) such programs will appeal to women with the desire to participate for reasons of weight management, appearance, and ill health avoidance. However, a large

group of students might be left out who are motivated to participate in programs that offer them a sense of affiliation, enjoyment, challenge, and a sense of revitalization. For these groups of students, lifestyle activities and recreation sport participation can motivate them to participate.

## Method

### Participants

A total of 386 individuals participated in a series of research questionnaires including the Motivation to Learn Inventory (University of Arkansas, 2010), as well as collection of basic demographic information such as age, gender, marital status, and education level. Of those participants, 168 females and 88 males. The remaining 130 respondents did not identify gender and, therefore, their data were not retained. The participants were students at a mid-western university and were from a variety of academic majors as well as age levels.

### Instrumentation

#### Motivation to Learn Inventory

Gender and marital status were measured through self-identification. Participants selected either “male” or “female” as a gender designation. Participants also completed the Motivation to Learn Inventory. A total of 25 questions were presented with responses indicated on a 5 point Likert scale. Responses were coded using Latin alphabet characters (N = Never, S = Sometimes, A = Always, etc.) and transformed into continuous data points 1 through 5. Questions included statements such as “I feel frustrated with learning new things.” Identified in the Motivation to Learn Inventory is a sub-scale measuring Motivation to Learn when challenged and despite fatigue. Questions 5, and 19-24 of the Motivation to Learn Inventory make up the sub-scale. No transformations were required to calculate the sub-scale. Instead of averaging the items, a total score was calculated to perform the Pearson R correlation and determine the relationship between the variables. The total score instead of the average of the sub-scale was used to not minimize the differences between the scores on those inventory items as answered by the participants.

In the analysis of the motivation to learn inventory, the higher scores represent higher levels of motivation to learn when challenged and despite fatigue. This particular subsection of the inventory best reflects classroom and grade related eustress that would lead to academic success. The second important data collected in the Motivation to Learn (MTL) Inventory was the minutes of exercise per week that each participant engaged in. This data was used to compare the participant's physical activity with their score on the motivation to learn subscale.

## Procedure

Data were collected via convenience sampling. Graduate students were tasked with collecting completed survey data from friends, neighbors, family, and work colleagues. Additional participants were identified as well in public locations and various higher learning campuses. The surveys contained additional demographic information, as well as aggression and cultural opinion data, not used in this research. A total of 386 individuals completed the survey, and of those 256 identified their gender as either male ( $n = 88$ ) or female ( $n = 168$ ). The remaining 130 surveys in which participants did not identify a gender were not utilized in this study. A Pearson R, for all participants, for males, and for females, was calculated to determine if there was a significant relationship between the participants' motivation to learn (academic achievement related variable) compared to the number of hours per week that they exercised (physical fitness variable). An alpha level of .05 was used for all calculations to test for statistical significance. Because data was analyzed using SAS, the P value was used to indicate statistical significance. The P Value was determined significant below .05 as well.

## Results

### Preliminary Analyses

Detailed results are presented in Table 1 for the Motivation to Learn (MTL) subscale (when challenged and despite fatigue) and the hours of reported minutes of exercise per week. The recommended weekly exercise for adults is 30 minutes per day for five days a week. (150 minutes). The males' mean average of reported exercise per week was 27.87 minutes above the recommended average, and the women's' mean

average was 38.87 below the recommended average. The females' motivation to learn (MTL) mean score was slightly higher (24.78 vs. 24.31) than the men's.

Table 1

*Exercise and Motivation to Learn (MTL) Data for all participants, and male and female participants. Descriptive Statistics.*

Source	N	Exercise Mean	Exercise SD	MTL Mean	MTL SD
All participants	256	134.94	159.22	24.66	3.69
Males	88	177.87	191.65	24.31	4.00
Females	168	111.13	134.53	24.78	4.00

\* $\alpha = .05$

In Table 2 below, we note the Pearson R and P values when we compare (1) the reported Minutes of Exercise per week data with (2) the Motivation to Learn (MTL) sub-scale data for all participants, and for male and female participants.

Table 2

*Exercise and Motivation to Learn (MTL) Data for all participants, male and female participants. Correlation Data between MTL and Exercise.*

Source	Pearson R Value	P, $\alpha$
All Participants	.14	.03*
Males	.14	.20
Females	.09	.25

\* .03 is statistically significant

#### Discussion/Conclusions

The results from this study reveal that there is a statistically significant but weak

correlation ( $R = .14$ ) between the variables of exercise and motivation to learn among college students. The lack of a strong relationship between the variables investigated here means that the high school students (where  $R = .41$ ) did show a stronger relationship between these two variables than among the college students ( $R = .14$ ). Students in college stay motivated to learn, but, as expected, they either become less motivated to exercise or the relationship between their exercise and their motivation to learn further widens. One way, perhaps, to increase student motivation to exercise is to broaden opportunities to students that will appeal to a mastery goal orientation and offer lifestyle fitness opportunities and recreational sport opportunities that is more appealing to those with differing goals from the traditional exercise offerings at a college. Although motivation to learn can be both intrinsic and extrinsic, future research in the form of a longitudinal study should be conducted to determine if intrinsic motivation can narrow the gap between motivation to learn and exercise by viewing exercise as motivation to live a healthy life and meet a broad range of needs that people have through college and into adulthood. In this study, we did not investigate the scope or type of exercise offerings that the students were offered at the specific school where the survey was conducted. Had more offerings been available, the results could have been different. Further research identifying the “ideal” environment for fitness activities could produce differing results.

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Family Conferencing as a Means of Enhancing Aboriginal Content and Delivery

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**Abstract**

Aboriginal students face a myriad of educational difficulties due to both the lasting legacy of colonialism and to the lack of culturally-relevant experiences in the classroom. Educators must be willing to examine the historical implications of separating the student from communities and families, and be willing to engage extended family members fully in the classroom experience. Family conferencing is a system of immersing relevant community persons into a student's academic life through the process of negotiation and accommodation.

### **Family Conferencing as a Means of Enhancing Aboriginal Content and Delivery**

For many thousands of years, Aboriginal peoples occupied the lands in which I now live. I give thanks and acknowledgement to the Kwanlin Dün First Nation and the Ta'an Kwäch'än Council, for graciously and hospitably sharing their sacred spaces.

Like most of my fellow countrypersons, I am not a descendent of the First Peoples who have lived on this land for several thousands of years. My ancestors were European, and though I hope they lived peacefully and with profound respect for their Aboriginal kin, the inherent nature of being of European descent in America means they were part of colonialism. In degrees, this may also mean that I serve as a participant in the perpetuation of colonialist practices.

Working with and for Aboriginal peoples, I am acutely aware of my non-Aboriginal status. The common, every day practices that I do working with First Nation youth who are identified as being "at-risk" actually require great consideration, prudence and planning. I am cognizant of the notion that my participants are in their individual quandaries as a result of poor personal choices, societal barriers, and of course, a lifetime of conflicting cultural epistemologies. The inner discord that has developed within each young person is not solely due to a single factor, in spite of society's attempts at generalization and indiscriminate blaming. Rather, it is the manifestation of many generations of cultural shaming, governmental misappropriation, and the attempted assimilation of Canada's Native peoples into colonialist society.

The end result of this endeavor is found in the collective experience of many young people: disenfranchised, little interest in engagement, but with profound potential. It is within this promise-to-be that there is capability and a remarkable capacity to change. They are

exploring the history of their parents and grandparents, grasping at the injustices of the past. These young people comprehend a great deal, and appreciate the value systems inherent in Aboriginal knowledge. They crave the familiarity of their ancestors.

To bring traditional teachings to them, and to have their cultural values normalized and accepted requires a great deal of change within the educational system. Starting with the identification of curriculum discrimination and working toward the system's embracement of Aboriginal values, agents within the educational sphere must adopt methods of delivery and a relevant content that meet the needs of First Nation peoples. This means working toward culturally relevant teaching practices through the inclusion of the Aboriginal community. As our Indigenous students typically have large extended families, this curriculum overhaul could be partially achieved through family conferencing, which serves to generate familial interest and involvement in student's school life. With the adoption of family conferencing, educators can effectively generate curriculum change through the edification of Aboriginal cultural and the adoption of holistic, person-centered engagement practices.

This essay explores colonialist practices within educational systems, and demonstrates how Western teaching practices perpetuate cultural discrimination through the absence of Aboriginal curriculum. The context of what constitutes Aboriginal teachings is discussed, as are the various ways that teachers can be inclusive of alternative value systems. The crucial role of extended family in the lives of Aboriginal children is considered, and the traditional method of interacting with family through parent-teacher interviews is examined. Lastly, the recommendation of conferencing as a platform for family inclusion is suggested as a means to bring the First Nation perspective into the classroom.

### **Toward Aboriginal Content and Delivery**

For over 130 years, residential schools across Canada performed the government's mandate of Indigenous assimilation. Through the systematic stripping of cultural identity, belief systems, language and familial connections, young First Nations people emerged from educational institutions largely bereft of their cultural knowledge. Indian and Northern Affairs states that these institutional exploitations left Aboriginal peoples with "lateral violence, suicide, depression, poverty, alcoholism, and absence of parenting skills and the capacity to build and sustain healthy families and communities" (as cited in Belanger, 2012).

The legacy of residential schools has had a detrimental effect on the lives of Indigenous people and has led to severe distrust within the educational system today. The reasoning behind this suspect is clear: many characteristics of residential schools mirror what we offer our students today, including mandatory curriculum in an institutional setting, language of instruction which is that of majority, the white experience is the benchmark of normalcy, and there are little or no opportunities to experience Aboriginal cultural traditions.

In spite of our increasing awareness of the harmful effects that residential schools had and continue to have on our Aboriginal peoples, we nonetheless maintain our epistemological ethnocentrism (Witt, 2006). Our perceptions of Aboriginal children's success or failure is gauged against that of the dominant Canadian culture, specifically that of the white, middle class child. Cultural teachings are assessed according to Eurocentric acceptance, with the Western worldview assumed to be a global perspective (Chun-yan, 2008). These expansive notions of what constitutes a "typical" experience and make up the bulk of our school's cultural formations are deeply removed from small, northern communities in Canada. Yet our centrally developed

curriculums continue to instruct our Aboriginal youth in a manner that is not conducive to their developmental, cultural or holistic needs.

The result of the disconnect between First Nation youth and the educational system is apparent. Aboriginal students indicate feelings of marginalization (Gunn, Pomahac, Striker, and Tailfeathers, 2011), and poor relationship developments within the school (Gunn, Heffernan, Beaudin, and Tailfeathers, 2004). Statistics Canada(2006) reports that 34% of Aboriginals have not completed high school. Archibald indicates that high levels of absenteeism, originally a form of resistance, occur on a regular basis (as cited in Nguyen, 2011). Blame for perceived failures of the young person is placed on the families (Hare and Pigeon, 2011). First Nation peoples, in turn, may be unwilling to engage in a system that they feel does not honor their circumstance (Witt, 2006) or work toward overcoming the struggles they face on a daily basis.

In spite of such systemic discrimination, First Nation peoples have repeatedly ascertained the importance of passing on traditional Aboriginal teachings to their young, recognizing that this shared knowledge is the foundation of their success in learning (Hare and Pigeon, 2011). Nguyen (2011), stresses this point, arguing for Aboriginal teaching space across educational spheres. Quoting Dr. Marie Battiste, she writes "This struggle demands an urgent agenda to effect educational reform....and to protect and enhance Indigenous heritage and livelihood damaged by colonial assimilation projects, neglect, diminishment, and racism." (p.85).

If one accepts that a key tenet in overthrowing epistemological ethnocentrism and countering the effects of colonialist thought is in the adoption of curriculum focused within traditional Aboriginal teachings, then one must also dispense with the notions of Aboriginal enrichment projects. This common practice, often called the "beads and feathers approach" (Gunn et al., 2011) is the predominant method of bringing traditional knowledge into the

classroom. In essence, it is the inclusion of selective aspects of Aboriginal knowledge into Eurocentric curriculum, such as the adoption of a morning prayer circle or the creation of a cultural-awareness day.

Through the practice of Aboriginal enrichment, entire Indigenous cultures are minimized, deeply spiritual belief systems glossed over in the guise of edification. The appropriation of culture to utilize as one desires, regardless of presence or lack of malevolent intent, is a staple of colonialist practice. Celia Haig-Brown (2010), potentially recognizing appropriation as cultural exploitation, posits the following question: "What does it mean and what happens when one (attempts to or) does occupy culturally based concepts, beliefs, values, and thought processes for purposes other than what may have initially been intended by the originators?" (p. 931).

Although most educators would be unlikely to view cultural activities as sinister in nature, one should always bear in mind that if the peoples who are being portrayed, discussed or culturally explored are not directly involved in the design and delivery of the subject matter, there is the very real possibility that one is engaged in exploitative and oppressive teaching practices.

Harrison and Greenfield (2011) state that "it is not only a question of transmitting syllabus information *about* Aboriginal people, teachers also need to analyze what *knowledge* and *perspectives* are appropriate to include in the curriculum and what the pedagogy *does* to students in terms of their expectations and images and how they talk about Aboriginal people" (p. 69).

To engage our young citizens in a culturally appropriate manner requires serious forethought as to how it may be interpreted by the classroom. As an educator, I must ask myself: "Am I providing an honest reflection of the circumstance and cultures of Aboriginal peoples, or am I providing my *interpretation* of the circumstance and cultures of Aboriginal peoples?" As we are all constructs of the culture of our individual lives, so too are our thoughts the construct

of how we understand the world around us. Certainly, my definitions and assessments of Aboriginal peoples would likely not mirror an Aboriginal's definition and assessment of him or herself. Here, as educators, we must question if the best interests of our Aboriginal students are being served by indoctrinating them into our stereotypes of what a Native person is.

The control and dissemination of Aboriginal knowledge is theirs and theirs alone. If one does agree that ownership of a people's culture is left to the originator of said culture, then so too must one agree that this power should be both implemented by the originator and manipulated in a manner that is befitting to the originator. In other words, the practice of traditional teaching and cultural exercise should be managed in entirety by First Nation peoples. In support of this entitlement, the United Nations, recognizing the unique struggles of the world's Indigenous peoples, drafted the Declaration on the Rights of Indigenous peoples. This instrument reflects a growing international consciousness toward the inherent rights of Aboriginal peoples. Of note, Article 31 states the following:

Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports and traditional games and visual and performing arts. They also have the right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions. (United Nations, 2008).

While not a legally binding document (and one in which Canada opted out of signatory agreement), this Declaration proposes a worldwide movement toward acknowledging the harms

inflicted by colonial advancement. It also recognizes the sensitive nature of misappropriation, and accepts notions of great damages done to entire peoples when stripped of culture and traditional knowledge.

Although there are concerns that peoples frequently lose the right to control their culture in the offerings of Aboriginal enrichment activities, there are those who believe that it is an appropriate means of providing culturally relevant teachings in the classroom. A widespread argument in defense of Aboriginal enrichment practices is that it exposes our students to Indigenous culture where otherwise there would be none (Haig-Brown, 2010; Harrison et.al. 2011), and for that purpose alone the practice should be vindicated. In addition, some teachers feel that enrichment activities provide students with an alternative perspective, opening the window to different worldviews and providing students with opportunities to explore different cultures (Vize, 2009). Nonetheless, practicing cultural activities that are not inherently owned can be a form of misappropriation, and can continue to perpetuate stereotypes about Aboriginal peoples.

Short of a traditional knowledge immersion system, educators are often left frustrated with trying to bridge culturally relevant teaching with the Western knowledge system (Saunders and Hill, 2007; McGregor, 2010). As previously indicated, teachers and schools must be extremely sensitive to the rightful ownership of the material being presented. This respectful approach carries with it a tremendous amount of responsibility, with educators being required to be knowledgeable in both Western and Indigenous ways of learning (McGregor, 2010). As this is often not possible, teachers are required to outsource, bringing in community members to serve as cultural educators. Although challenging, supporting skilled First Nation community members within classrooms can be highly rewarding. The wealth and depth of Aboriginal

knowledge that is often shared by a single family can provide schools with multiple opportunities to engage in enriching and relevant subject matter. By positioning community within the school, teachers are, in essence, creating a normalcy that is outside of the dominant cultural group.

Reimagining curriculum as a delivery within Aboriginal contexts requires an examination into what constitutes Aboriginal content. Are teachings that are effective in meeting the needs of Vuntut Gwitchin students going to generate interest in those with a Cree background? Is it possible to honor Indigenous customs in a manner that is befitting to differing heritage? It is difficult to justify using a broad brush to paint an egalitarian image, as the complexities within each Indigenous group is great. Utilizing knowledge of a particular sub-group (i.e. Tlingit women) and ascribing it as Indigenous knowledge in the name of cultural inclusiveness may be interpreted as being antithetical and servicing the needs of a principal group (Moore and Muller, 2010).

There is also the question of ambiguity in cultural representation. A portion of curriculum could be focused on Aboriginal identity, but the lines may be blurred when it comes to encouraging Indigenous teachings in areas that may be seen as uncompromising to the dominant cultural group (Hossain and Pratt, 2008). In 'core' subjects such as math or science, traditional knowledge is often quickly demoted or may be viewed as inferior. Within Western thought, science is the process and outcome of determining truth and non-truths through empirical studies, and traditional teachings are rarely given the opportunity to produce an alternative method of scientific query (Linkson, 1999; Michie, 2002). In addition, many educators view science as a universal worldview and outside the realms of cultural perspectives (Morey and Kitano, 1997). Described frequently as fragmentation or compartmentalization, science has essentially served as a dichotomizing means of viewing oneself with the world;

through isolating parts of the world, science effectively removes context and relationship (Linkson, 1999). There appears to be little room for culture, given that the relationships that are so valued in Aboriginal knowledge are precluded for the sake of Eurocentric perceptions of truth and non-truths.

Many scholars do, however, argue that science is entrenched in culture. There is the recognition that the notion of an absolute or final product is crafted within Eurocentric values, given that these values place high importance on finding an end goal, rather than significance placed on the complex relationships in the natural world (Sterenberg and Hogue, 2011). Brandt (2007) describes how Aboriginals view the world in terms of processes as opposed to the Western perspective of science as product, with the product being knowledge. Aboriginal science may also include the spiritual, and be entrenched in oral history and ceremony (Sterenberg, 2011). Gayle Ball, a 26 year-old woman of Tahltan First Nation decent, described her peoples relationship with the land as being a part of science. She illustrated the important role of cycles within her people's belief system, stating that all beings within the universe are intricately connected. This is why, she elaborates, that when we use something for our personal use (i.e. a tree), we must treat it with profound respect, and offer something sacred to the earth for surrendering it. We are, in essence, a part of the very thing that we are utilizing, and should be very careful to respect and honor this relationship (Gayle Ball, personal communication, December 13, 2012).

Understanding the importance Aboriginal peoples place on natural cycles and on complex relationships does not have to exist outside of Eurocentric science. It is possible to bridge union between the two, if educational systems are prepared to understand Aboriginal knowledge as a holistic means of teaching truths. A simplistic example of this can be found in

explaining universality to young people, and how we are all commonly connected through similar atoms that have been in existence for eons. Carl Sagan attributes this to all matter being formed of ancient stars (1980), and arguably the ancestral homage of all peoples is not outside the realm of astrophysics, being bound by the same laws of nature as today. A synergy is possible, if educators are prepared to examine content to be more inclusive of Aboriginal values.

While not entirely symbiotic, an aspect of science that is highly inclusive of Aboriginal knowledge is in the Western world's practical use of the natural world, in such fields as "ethnobotany, ecology, pharmacology, and medicine"(Sririman, 2011, p. 218). Adoption of the rich and deeply informative Aboriginal understanding of the physical world has certainly proved beneficial to the study of science. Again, however, we are reminded that appropriation of Indigenous knowledge includes both the utilization of garnered information without informed consent and the dissemination of this knowledge in a manner that fails to recognize and honor the original owner.

In essence, the content of a curriculum that is inclusive of Aboriginal representation and interests must include both Aboriginal perspective and Aboriginal knowledge. If the educator is non-Aboriginal, he or she must be aware that what is being taught is not Aboriginal perspective, but is a "non-Aboriginal teacher's perspectives on Aboriginals" (Harrison and Greenfield, 2011, p. 70). Schools can circumvent this scenario through active recruitment of Indigenous community members who are committed to entering school settings on a recurring basis, for significant periods. Perspectives must also be inclusive of Aboriginal knowledge, and in particular, traditional teaching.

To reach our young, Aboriginal students, educators must find ways to decolonize their classroom learning experience. As discussed, this process can be initiated if educational systems

recognize the inherent Eurocentric values in current curriculum and work toward deconstructing this through the adoption of Aboriginal content and Aboriginal delivery. This process may be extremely challenging, as it requires the surrendering of teacher-controlled delivery through the espousal of First Nation community members as core classroom facilitators. As educators, we must be flexible in our approach, ensuring the interests of the Aboriginal community is transparent in our classrooms.

### **Family Conferencing as Engagement**

Aboriginal students, like all students, are typically involved in a school setting that has a teacher at the head of the class, with limited or no parental interactions throughout the duration of the school day. Unlike other children, however, Aboriginal students often have an extensive expanded family that they rely on heavily to do the tasks that are, for non-Aboriginals, delegated as parental roles. In effect, numerous individuals contribute to raising a young member of an Indigenous family, creating multitudes of complex, deep relationships founded on interdependence and connectivity (Smith, 1997). These meaningful links to their familial community have always been a primary source of social capital and a valuable means of sharing resources (Daly and Smith, 2005; McTurk, Robinson, Lea, Nutton, and Carapetis, 2011).

Johnny Brass is a member of Saskatchewan's Key First Nation. He describes Aboriginal's familial philosophies as being founded in respect. From the time a child is very young, he or she is taught to think of extended or distant family members as very close, transforming a distant cousin into a brother or sister. Close family friends become uncles and aunts, and community Elders become grandmothers and grandfathers. Parents, recognizing individual strengths of certain extended family members, rely on these connections to help educate and discipline their young (Johnny Brass, personal interview, December 13, 2012).

Although Eurocentric culture is often quick to condemn parents for what is perceived as "pawning" their children off on family members, this cannot be further from the truth. Aboriginal peoples owe a great deal of their survival and cultural endurance to expanded familial relations. From 1884, when anti-potlatch laws were enacted and residential schools became responsible for education, Aboriginal peoples remained resilient in their convictions (First Nation Initiatives, n.d.). Potlatches were done in secret with small numbers of extended family. Children placed in residential schools gained whatever cultural knowledge they could from extended family and friends. On top of this, Aboriginal peoples continued to share resources amongst the community as they had for thousands of years. Their continued reliance on one another was one of their greatest assets in combating colonialist practices, and it continues to this day. Aboriginal attachment to their extended families is, as Johnny Brass says, "a society living within each person" (Brass, personal communication, December 13, 2012).

In understanding Aboriginals intimate and deeply rooted connection with family, we can see that educational systems are not fulfilling their duty to provide family interactions within schools. An Aboriginal child's identity is thoroughly entrenched in family, and unless a school setting is openly and actively encouraging family involvement on a daily basis, they are in effect perpetuating colonialist attitudes. According to John Ralston Saul, our schools are rooted in industrialist, dated theories and are in serious need of personalized education (2002). These school philosophies were fashioned in an era that did not, and could not, foresee the need for cultural inclusion and family involvement. The resulting system of hegemonic constructs greatly diminished the roles of cultural values and continues to relieve families of the power of self-determination and self-actualization.

The level of partnerships between schools and communities or teachers and families serves to either engender or minimize student success. Family-education collaboration has been recognized for a very long time in serving as a determinant in learning outcomes, and this has largely been done through the scheduled times of parent-teacher conferences. Lemmer describes this form of school-home interaction is the most widely used means of communication between parents and teachers in the world (as cited in Allen, 2008; Berger, 2008; Hiatt-Michael, 2001; Olsen and Fuller, 2008). Lemmer further reports that while parent-teacher conferences are extensively documented as being beneficial (as cited in Jeynes, 2010), they are known to show little advantage in cross-cultural situations (as cited in Guo, 2010).

As was discussed previously, teacher's understanding of First Nation culture is negligible. They may likely have an appreciation of cultural content, but may not have the knowledge scope that could be required to successfully engage in culturally relevant or appropriate discourse with a parent. As Witt (2006) attests, there is difficulty for non-Aboriginals to acquire Indigenous knowledge, as the nature of the learning and knowing process necessitates lengthy requirements. Teachers may not understand the depth and pervasiveness that expanded family relationships hold in a student's life, and parents, in turn, may not adequately convey the prominent role that these networks hold. Parent-teacher conferences cannot sufficiently represent the key players who host considerable guidance in the young person's life.

Parent-teacher conferences may also contribute to the enduring systemic oppression that Aboriginal peoples face. Rarely are these meetings held to highlight some advancements made by the student; most conferences serve to shed light on behavioral and academic issues. Again, the culpability of inadequacy is placed on the Aboriginal. The discussions may also be dominated by the teacher's concerns, giving parents little room to voice their wants and needs

(Lemmer, 2012). In addition, the parents may fear judgment, and may consider themselves as outside of the normative group (Jordan, Reyes-Blanes, M.E. Peel, H.A. Peel, and Lane, 1998). The structured schedule with narrow time-slot availability, the parents squeezed into children's chairs sitting across the desk from the teacher, the static, objective discussions surrounding a child who may not even be present, the limited opportunity for parental concerns: these standard methods of engaging in quasi-dialogue do little to address the needs of the family and the child (Lemmer, 2012; Minke and Anderson, 2003).

In spite of the apparent problems within the overall institution of parent-teacher conferences, many scholars contend that it is one of the better methods of engaging families with the schools, as parental involvement is generally thought of as a crucial step toward a successful school experience (Epstein, 2001; Jeynes, 2010; Lemmer, 2012; Peel, 1995). The educational system as a whole has known for years that a significant factor in student's positive school experience is found in the interactions with the student's family. The question now remains - how can educators coalesce the Aboriginal student with a personalized, family-centered approach to teaching?

To advocate for the betterment of our Aboriginal students, we must engage with family in a meaningful and culturally relevant manner. This means that as educators, we must be prepared to work within and for each student's expanded family and the larger First Nation community in general. Working toward this goal should be something that educators are persistently trying to achieve, and a possible introduction in meeting this objective is to expand upon the parent-teacher conferences with the implementation of family conferencing.

Family conferencing is a means of ensuring the people who are most involved in the child's life have the opportunity come together and develop a working plan that outlines how the

child's best interests can be met. Originally crafted in New Zealand by the Maori people, conferencing is a holistic approach for families to create action plans that outline individual strengths of family members and identify how these assets can be used in the interest of the child. Hayden (2009) describes the conference as an "approach to planning and decision making that involves the wider family network in partnership with, and supported by, the statutory and other agencies" (p207). Traditionally, family conferencing has been used in cases where a social worker is involved in a child's life, and is initiated as a means of stabilizing the young person's care and safety plans (Mireille Simon, personal communication, December 7, 2012). Since family conferencing is based on restorative principles, however, it by no means must be isolated to families in a stage of difficulty; in keeping with harmonious philosophies, it can be used to provide a platform from which all families can work toward a common goal.

How are family conferences different from parent-teacher conferences? According to Minke and Anderson (2003), the following apply to family conferences:

- (1) all parties prepare in advance,
- (2) students are active participants,
- (3) teachers concentrate at least as much on receiving as on giving information,
- (4) teachers focus on family and child strengths, and
- (5) the conference is a conversation; teachers are not "presenters" (p.52).

The process involves numerous stakeholders involved in the child's life, including parents and siblings, the child's close extended family members, family friends, and the family conference specialist (Yukon Family Conference Program, n.d.) As this conferencing proposal is removed from those youth identified as "at-risk" and is more of a generalized means of engaging Aboriginal students, a social worker may or may not be present. Being geared toward getting the

young person and family involved in the education system, this conference will also host the views of the educator and conceivably the principal . Last, but certainly not least, a First Nation representative who can advocate on and speak for the cultural needs of the young person should also be present.

After several weeks of preparation, participants come to the conference prepared to enter into balanced and judgment-free discussions about how to meet the needs of the clients. The groundwork before the conference may be the most imperative aspect of successful conference delivery, as it gives the specialist the opportunity to equip participants with the skills necessary to navigate a holistic discourse practice. They may enter the conference better prepared to hear what may be asked of them, and they are ready to offer ways that their individual roles may better serve the young person.

During the conference, the educator has the opportunity to describe to the family what is required for that particular student's success. In turn, the family can outline what the school system can do to better encourage, involve and represent the child. As it is in all family conferences, there is an allotted private time for families only (Yukon Family Conference Program, n.d.). During this period, the family discusses ways that the child can be better supported in school, and ways in which each family member can engage with the school.

The end result of the conference is a plan of action outlining how family members can support the student in school. It is important to note that the conference action plan, though placing greater responsibility on the family, is not indicative of submission on behalf of the family. Within an action plan, family members can offer ways that they can assimilate themselves into the schools, pending the school's flexibility to meet *their* needs. In other words, a child's aunt can engage the classroom in teaching about the worth of regalia in ceremonies,

under the stipulation that the teacher lessens control over the content of the teaching and sanctions full rights to develop the cultural expression as the aunt sees fit. The child's family can exercise cultural rights in the classroom in exchange for a proliferation of support for the student.

Family-focused and family-led conferencing need not be seen as a burden for teachers, however. Conferencing is a skill that must be developed, but it is done so by doing things *differently*, rather than working harder (Minke and Anderson, 2003). Citing her previous work, professor Betty Simmons identifies three working assumptions that educators must master as they enter a conference:

I) *Assume good will*. The participants in any family conference will most likely have nothing but positive intentions for the child and for the outcome of the group.

II) *Assume competence*. Having alternative perspectives doesn't necessarily denote ineptitude.

III) *Assume a shared responsibility*. All members of a group have a role in the development of an action plan, and each role is valued. (Howe and Simmons, 1993).

Strong communication skills that are utilized in a transparent and holistic manner are extremely important for teachers engaging with families, particularly when it is across cultures (Jordan, et al., 1998; Peel, 1995). The aforementioned assumptions, taken with consideration and reflection, are a good means of ensuring respectful relationship. If family conferences are conducted in a manner that is beneficial to all of those involved, the temporary goal could be for all participants to leave feeling "connected, optimistic, respected and empowered" (Minke and Anderson, p. 50).

In spite of the qualitative support of family conferencing, there is indication in some studies that illustrate its limitations. University of Portsmouth Professor Carol Hayden (2009) had the opportunity to test the perceived effectiveness of family group conferencing when compared to intervention strategies done through a state welfare agency. 78 cases were

examined, with 41 of these being conferencing (30 convened), and the "key independent variables were level of attendance, number and type of exclusion, age, and sex" (p. 211). The results of her data indicate that conferencing did not play a significant role in reducing absenteeism in school and did not necessarily denote a growth in positive behavior toward and within schools. She does specify, however, that this could be a result of the fact that the young people were often "severe" cases, and had undergone conferencing after being involved in numerous other attempts at intervention. Hayden also questions if the lack of resources available to conference specialists was a precursor for the minimal levels of success (2009). It should be noted that family conferencing in the United Kingdom is unlikely to mirror conferencing done in Canada. Although the principles and objectives may be similar, the participants are certain to be different.

Studies that have been conducted in America and Australasia indicate conferencing benefits youth who may be on the fringes of the education system, which is inclusive of Aboriginals. Research conducted by Minke and Anderson (2003) indicate that participants feel an improved sense of communication between family and school, and educators experienced an increased understanding of the family's capabilities. Many participants also report feelings of empowerment and a strengthened ability to take on responsibility (Walton, Roby, Frandsen, and Davidson, 2003). They also reported a lack of trust in the current system and an eagerness to try family conferencing as an alternative to conventional routines (Waites, MacGowan, and Pennell, 2004).

**Conclusion**

There is a considerable amount of literature devoted to the difficulties Aboriginal peoples face within the education system. A significant portion of this focuses on the myriad of ways that school institutions and agents can better support these students. This essay has explored a few methods that can be used to work toward Aboriginal student success. It is important to address the detrimental role that colonialist practices continue to play in hindering Indigenous learning process, including the teaching practices that oppress and reject Aboriginal culture within the blanket curriculum and particularly within the Eurocentric truth-based courses such as math and science. It is also crucial to recognize the essential role of context and place in knowledge delivery, as it is far too simple to recreate stereotypes in absence of critical consideration of content. A means of wedding Aboriginal curriculum to educational systems is in garnering the active support of the First Nation community through the amelioration of family conferencing. In adopting a family-focused means of critical engagement, educators are recognizing the powerful role that extended family has within each young Aboriginal student, and teachers are thus capable of accessing the First Nation content and delivery that is needed as a means of deconstructing cultural hegemony.

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**From Elementary to High School: Examining Consistencies in Students’  
Understanding of Quantitative Reasoning**

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*Abstract: Prior studies examined how students use quantitative reasoning and multiple representations to model mathematical relationships. In this paper we will discuss how students attend to the structure of an equation and how they reason about the expressed quantities. The assessment was adapted from the elementary project, Measure Up, and administered to Grade 5 and Grade 12 students. Findings from this research can add to the understanding of a quantitative reasoning trajectory.*

The elementary grades mathematics project, Measure Up, being conducted at the Curriculum Research & Development Group at the University of Hawai‘i, has given us insight to alternative curricular approaches for the learning of mathematics. In contrast with the more typical, counting approach (Devlin, 2009) to mathematics instruction, Measure Up uses a measurement context to develop critical mathematical topics (Dougherty & Venenciano, 2007). Findings on prior studies of the effects of this curriculum show that third grade students are capable of using algebraic symbols and generalized diagrams to solve problems (Dougherty & Slovin, 2004). Another study implies that the Measure Up fifth and sixth grade students are better prepared for algebra compared to non-Measure Up students in the sixth and seventh grades (Slovin & Venenciano, 2008). Furthermore, the findings from the later study study show that Measure Up students are capable to correctly justify how they arrived at solutions on

tasks that required the interpretation of letters as specific unknowns (i.e., not assigned values or as objects).

The mathematics of Measure Up has been adapted from the work of the El'konin-Davydov Russian curriculum (Davydov, Gorbov, Mukulina, Savelyeva, & Tabachnikova, 1999). One aspect of the Measure Up work examines how the presentation of abstract concepts, such as mathematical properties and proofs, could be used to develop concrete concepts, such as numeric applications. An underlying premise is that in order for children to truly learn mathematics, they must learn to think theoretically and use abstractions with understanding. Thus, by focusing instruction on the structure of the mathematics and the development of quantitative reasoning skills, we conjecture that students will have a more robust understanding of the mathematics.

Prior studies have examined how students use quantitative reasoning and multiple representations to model mathematical relationships. Thompson (1993) noted challenges Grade 5 students had with conceiving of a quantitative difference apart from the arithmetic operation of subtraction. Ng and Lee (2009) presented a model used in Singapore schools as a structure for students to solve word problems. This heuristic was found to support children's integration of text with pictorial and symbolic representations. Other researchers have studied students' abilities to use algebraic symbols and generalized diagrams in problem solving (e.g., Sfard, 1991, 1995; Dougherty & Slovin, 2004). Studies with older students include understanding of quantitative reasoning focused on the thinking that drives mathematical modeling (Doerr & Tripp, 1999), and how students generate algebraic models (Izsak, 2010). Our research focuses on how students in their final semester of a college track mathematics program integrated their early understanding of quantitative relationships with recent learning of high school mathematics.

The CCSS (CCSSI, 2010) document identifies *students' abilities to reason abstractly and quantitatively* as one of the Standards for Mathematical Practice. The data analysis in this study uses this lens to identify aspects of decontextualizing-contextualizing in students' reasoning. In an attempt to uncover the abstract and quantitative reasoning abilities students have developed we investigate the following question, *How do students use a length model to represent an equation?* Reference to

*representing an equation* refers to how the quantities given in an equation can be represented on the line segment in a manner that preserves the relationships indicated by the equation.

### **Method**

Thirteen students were interviewed in the spring of 2013. Six had participated in the elementary mathematics project, Measure Up. Seven students were selected to form an equally diverse group that matched the first group in three areas; their seventh grade achievement scores in mathematics and language arts, and social economic background. All were twelfth grade students attending a school in a metropolitan area and all completed algebra in eighth grade and the same high school sequence of courses, which included a full year of geometry and three years of an integrated mathematics program. Matching the groups based on seventh grade data served as a means to focus our research on the effects of how the secondary school mathematics experiences were subsumed, with regard to quantitative reasoning.

The assessment instrument in the current study was developed from the Measure Up curriculum. Existing data from the Measure Up project provide responses from Grade 5 students' work. Using the same tasks with the students in Grade 12 allows us to analyze consistencies in students' responses, on the individual student level and on the Measure Up or non-Measure Up subgroup level.

The interview structure allowed for both independent and small group work. Students were organized into groups of three or four, resulting in two groups of students with Measure Up experience and two groups with no Measure Up experience. One group was interviewed per day, during a lunch break that was approximately 35 minutes. The same interviewer conducted each interview. Each interview began with students working on problems independently for ten minutes. This was followed by another ten minutes during which the students sat as a group to discuss their thinking, adjust their answers if they could make them stronger, write notes about the problem, and ask questions of each other. This type of exchange among students is an instructional technique regularly used by their high school mathematics teachers and therefore was expected to promote deeper consideration of the mathematics. To help distinguish changes in their responses due to this interaction, students used pen on independent work and pencil for the group work.

The interviewer prompted the students to continue talking about the mathematics by asking follow-up questions if a student's response was unclear or incomplete. The interviews were audio recorded and transcribed. Two observers were also present during the interviews and took written notes.

The assessment instrument used in the interviews consisted of three tasks with two subparts each. The tasks were taken from the Grade 5 Measure Up curriculum. The first task (see Fig. 1) directed students to mark and label a line segment such that it represented the equations  $X = A - (B - C)$  in the first subpart, and  $X = (A - B) - C$  in the second. Following each equation and accompanying line segment is a request for an explanation of the reasoning about the labels created by the student. This gives students the opportunity to clarify the purpose of their markings and labels and say how these relate to the equation.

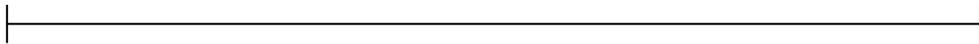
Mark and label each line segment with  $X$ ,  $A$ ,  $B$ , and  $C$  so that it is a representation of the equation.

a.  $X = A - (B - C)$



Explain your reasoning for how you labeled the line segment.

b.  $X = (A - B) - C$



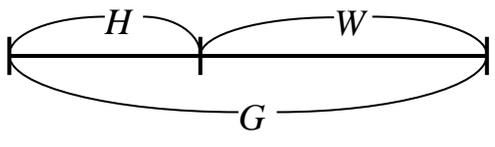
Explain your reasoning for how you labeled the line segment.

*Figure 1.* Tasks 1a and 1b from the Senior Interview Tasks assessment instrument

The second task (see Fig. 2) showed equations and a line segment indicating how quantities were related, and directed students to assess quantitative relationships based on these conditions. This report focuses on these first two problems.

a. What is  $\frac{W}{D}$  if  $\frac{H}{D} = y$  and  $\frac{G}{D} = r$ ?

b. How many *Es* are in *W* if  $\frac{D}{E} = t$ ?



*Figure 2.* Task 2a and 2b from the Senior Interview Tasks assessment instrument

## Results

Preliminary analysis of the data indicated recurring features in both Grade 5 and Grade 12 students' responses to the assessment tasks. We developed a classification, specific to each problem, based on written and audio responses. The following characteristics emerged as strategies the students used to respond to Problem 1a—

- a. considered the distributive property or other manipulation of the equation, and then address the line segment representation
- b. used the line segment as a number line by labeling points along the segment
- c. used the line segment as a quantity of length
- d. attended to the part-whole concept in subtraction
- e. used multiple representations to consistently model the mathematics

For Problem 2, several students responded by either leaving both subparts blank, writing a note to indicate their confusion and asking for clarification of the letters in the equation, or by making a guess that did not appear to have a sensible mathematical connection. Some students responded productively in the following ways—

- a. applied algebraic manipulation to the equation
- b. wrote an answer (without showing or writing about how the answer was found) and talk about their thinking

## **Discussion**

The interviews were conducted during the final semester of students' studies in a college-bound sequence of mathematics courses. Every Grade 12 student likely possessed the ability to solve an equation using fundamental algebraic manipulations however several responses indicated some struggle with consistent reasoning as students transferred an algebraic equation to a representation of the quantities on a line segment. This was evidenced by how the relationships among the quantities were depicted.

Although most of the same characteristics were evident in the students' work on Problem 1a, regardless of their grade level, in general, Grade 5 students' responses were executed with greater consistency with regards to the representations of the quantitative relationships. Further research is needed to explore how later mathematics instruction may be used to support the continued development of students' quantitative reasoning with regard to the structure of relationships in equations and in linear representations.

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### **Abstract**

The roles of the professionals within the school building are ever adjusting to the new demands. The increase in ELL population, the introduction of Common Core, the decrease of funds and support personnel, among other issues, impact the roles of all professionals in the building. The leaders of each school are faced with a challenge in supporting their staff and educating their students within these challenges. Different models of leadership, i.e., collaborative, distributed etc. attempt to provide guidance on best practices in doing this. We postulate that the school counselor is an underutilized resource within the school. In presenting the Competencies of School Counselors, published by the American Counselor Association and the California Standards of Educational Administrators (CASELs) we display a clear parallel between the roles and expectations of these professionals in the building. The impetus behind this is to share with educational leaders the appropriate ways to use the school counselor. The effectiveness of this model is dependent on an appropriate collaborative relationship between the professionals in the building. Thus we will guide participants in understanding the basis of a collaborative relationship, and through scenario we will present evidence to support an the inclusion of the School Counselor in an expanded leadership team in order to assist the principal in meeting the vast requirements of the building and maximize the skills of professional school counselors within the building.

**a. Title of the Submission**

*Pathways to ACT Mastery: The Implementation Process*

**b. Topic Area of the Submission**

Secondary Education

**c. Presentation Format-Panel Session**

**d. Description**

This presentation is designed to present a model for preparing secondary students to achieve mastery on the ACT. The multi-media presentation will be used to present instructional strategies and resources that have been actually used with secondary students. Student artifacts and assessment results of the implementation process will also be presented.

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## Abstract

This panel session is designed to *first* present the components of the *Pathways to ACT Mastery Model* based on related research. *Second*, the presenters will share the results of instructional strategies, activities and resources that were used in the implementation of the model with secondary students. Additionally, the panel of presenters will outline how the *The Pathways to ACT Mastery Model* directly relates to the College Readiness Standards for English, Math, Reading and Science. The presenters will use highly interactive activities and resources that focus on the Common Core Standards and ACT's College and Career Readiness System. The team of presenters who include specialists in the ACT Prep areas of focus (Math, Science, Reading, and English), will demonstrate the use of selected resources and strategies that are outlined in their *ACT Prep Instructional Modules* that they developed.

These *Instructional Modules* guide the implementation of activities for the specific focus areas according to the description outlined in the reference, "Alignment of Common Core and ACT's College and Career Readiness System, June 2010" (<http://www.act.org/commoncore/pdf/common>). The other team members will present various activities that they have used to provide opportunities for the students to *apply and transfer* the content knowledge gained from the four content areas. Specific ACT test-taking strategies that have been used with the secondary students will also be presented. Additionally, results that demonstrate the impact of using the *Pathways to ACT Mastery Model* will be provided. Finally, student feedback and artifacts from the implementation process will be shared.

## **ABSTRACT**

This paper aims to explore how do presidents of Taiwan and America show their respective democratic values by figuring out the differences of inaugural addresses between Eastern and Western countries. Data were collected from presidential inaugural speeches in Taiwan and in America, that is, President Ma, Ying-Jeou's and President Barack Obama's inaugural speeches were analyzed in this paper.

Paul Gee's (2005) method of discourse analysis was used in this study to analyze the presidential inaugural speeches. Seven building tasks, i.e. significance, activities, identities, relationships, politics, connections, and sign systems and knowledge are the tools of inquiry used in analyzing and interpreting the data.

The results of the study are as follows. (1) President Ma and President Obama had different perspectives on maintaining foreign relations with other countries and core values of their countries respectively. (2) President Ma and President Obama showed their democratic values by paying attention to some general issues such as economy, constitutions, environmental protection, gaining mutual trust between the government and the people, and maintaining good relationships with foreign allies.

In conclusion, by analyzing and comparing the two nations' presidential inaugural addresses, the democratic values and ideologies of President Ma and President Obama can be better understood, thus leading to more understanding about the cultures and histories of the two countries.

**Keywords:** democracy, Discourse, tools of inquiry

**Title:** Data-Driven Instruction Cycle: A Model for Professional Development

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## Data-Driven Instruction Cycle: A Model for Professional Development

### Motivation for project

School districts are rising to meet the challenge of implementing the Common Core State Standards for Mathematics (CCSSM). The efforts of one district in our area include increased attention to the interpretation of assessment data, both from large-scale and classroom-level assessment tools. We collaborated with the district to design a professional development program to support K-5 teachers in using such assessment data to guide their instruction in the context of CCSSM. Key elements in the motivation for the project include: (1) addressing a need identified by the district teachers, (2) ongoing activities throughout the academic year, and (3) attention to both the content and practice standards within CCSSM. These elements guided our design of the professional development model.

### Model

The prominent need identified by the district was an increase in teachers' ability to interpret and use results of assessments in their planning for instruction. We consider assessment and instruction inextricably linked, and summarize this interaction in the Data-Driven Instruction Cycle diagram presented in Figure 1. One can enter the cycle at any point; to match the design of the project, we begin with *Assessment* at the top center. We use this term broadly to refer to results of formative, summative, or district- and state-level assessment activities. Data may have been collected informally by a classroom teacher or as part of a more systematic assessment sequence. *Analyzing* these data focuses on trends across students or across grades and may generate questions to be answered. Through this analysis, specific *focus areas* can be identified, which then guide the *design and implementation of instruction*. The instructional plans include plans for further assessment, which begins a next iteration of the cycle.

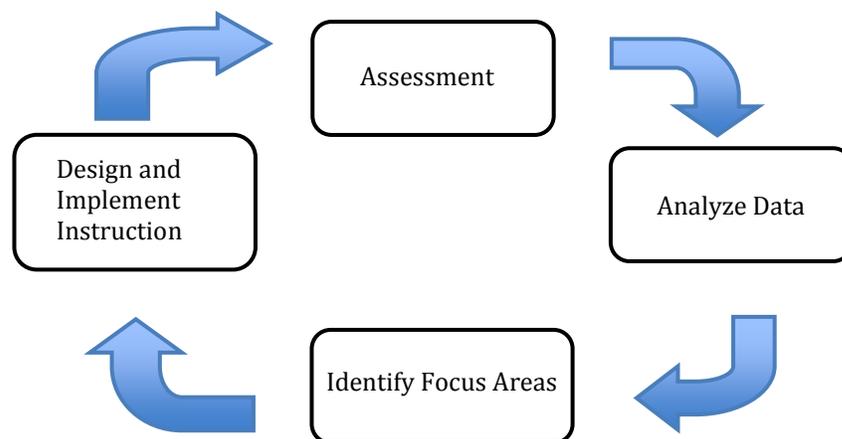


Figure 1: Data-Driven Instruction Cycle

Our design of the project attends to the five *critical areas* identified by Kanold and Larson (2012) as required for professional development in the context of CCSSM: collaboration, instruction, content, assessment, and intervention. *Collaboration* refers to building teams capable of supporting change across classrooms, and perhaps across schools. *Instruction* includes a shift to more fully incorporate both the practice and content standards. *Content* is a key area of focus, as specific grade-level objectives are revised to allow for deeper treatment of fewer concepts. *Assessment* focuses on conceptualizing assessment as a means within a teaching-assessing-learning cycle rather than as an end. Finally, *intervention* refers to developing responses appropriate both for when students *do* learn the intended curriculum and when they *do not*.

Specifically, the project aimed to develop an effective and replicable professional development model that prepares teachers to: (1) interpret assessment data to inform mathematics instruction, (2) create effective lesson plans that include regular use of formative assessments, and (3) develop effective instructional techniques aligned with the district concept map (revised to align with CCSSM).

### **Participants and Project Activities**

Our implementation goal was to support teachers as they interpreted results of district- and state-level assessments in order to plan prior to the 2012-13 academic year, and provide continuing support as they moved through the year. Teachers identified by the district as potential change agents were invited to participate. Seventeen teachers agreed to participate; Table 1 shows the grade level and school assignment for the teachers. In addition, six district math coaches participated in project activities.

	K	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	Totals
<b>School 1</b>				1	2*	1	<b>4</b>
<b>School 2</b>		1					<b>1</b>
<b>School 3</b>		1					<b>1</b>
<b>School 4</b>						1	<b>1</b>
<b>School 5</b>		1		1		1	<b>3</b>
<b>School 6</b>	1				1		<b>2</b>
<b>School 7</b>		1		1			<b>2</b>
<b>School 8</b>	1						<b>1</b>
<b>School 9</b>		1				1	<b>2</b>
<b>Totals</b>	<b>2</b>	<b>5</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>17</b>

Table 1: Distribution of participants across schools and grade levels.

\*The fourth teacher at School 1 taught a 4<sup>th</sup>/5<sup>th</sup> combination class.

Workshops. The teachers and coaches participated in four group sessions across the 2012-13 academic year: a 5-day summer workshop August 2012 (30 hours), one-day workshops in October 2012 (6 hours) and February 2013 (6 hours), and a 2-day workshop June 2013 (10 hours). The sessions encouraged active participation and coordination across schools and grade levels. A brief description of the focus of each workshop is given below.

The August 2012 workshop introduced the Data-Driven Instruction Cycle and focused on interpretation of district- and state-level assessments. Participants were provided with assessment data on their previous year's students and district personnel facilitated an analysis discussion. As a group, themes and implications were identified and aligned with district curricular objectives. The workshop introduced the participants to Smith and Stein's (2011) *5 Practices for Orchestrating Productive Mathematics Discussions*, a professional development resource aimed at supporting teachers as they facilitate mathematics discussions in their classrooms. Participants engaged in a mathematical task and discussion facilitated by project team members. Group reflection focused on instructional decisions made by the team member within the discussion. Participants worked in grade-level groups to identify specific instructional goals as indicated by the assessment data analysis and to create tasks to address these goals. Goals and tasks were then shared and coordination across grade levels discussed. The National Council of Teachers of Mathematics *Essential Understanding* series was provided to the teachers as a content resource.

The October 2012 and February 2013 one-day workshops were designed to delve deeper into specific content in terms of both the district curriculum objectives and CCSSM. This district at the time was in the process of realigning their curriculum objectives with CCSSM; there was much agreement between the district and CCSSM, but assessments and grade-level objectives were being revised. The October workshop focused on algebraic concepts and specifically on recognizing algebraic properties within elementary work on number and operations. This content focus matched the district's curriculum guide, so that teachers were planning lessons primarily focused on number and operations during the fall. Sample student work from the district was provided and examined to assess the level of algebraic thinking evidenced. The February 2013 workshop was similar in design and focused on geometric concepts to again match the district curriculum guide. Both workshops engaged participants in examining CCSSM for specific standards and progressions across grade levels; that is, a particular focus of the participants' work was to identify vertical alignments within CCSSM and attend to instructional goals that support students' development along such progressions.

Learning Mathematics for Teaching (LMT) Assessment: The LMT instrument (Hill, Schilling, & Ball, 2004) focuses on the group of teachers and so allows for evaluation of the design of the professional development intervention. The August 13 2012 pre-assessment established a baseline measure for these teachers in Number and Operations, Algebra, and Geometry. The August 17 2012 post-assessment indicates overall change in scores in Number and Operation and Algebra. The February 8 2013

post-assessment indicates changes in scores in Geometry. The June 2013 assessment covered all three areas and allows for analysis of change over time.

Case Studies: Case studies were selected in terms of willingness to participate, schedules, schools, and grade levels. The four teachers from School 1 and a 1<sup>st</sup> grade teacher from School 5 were selected as case studies. Observation cycles included a pre-interview, class observation, and post-interview. A total of twelve observation cycles were conducted across the five case studies. The pre-interviews focused on the teacher's planning for the lesson, to include any use of assessment data and references to the *5 Practices* (Smith & Stein, 2011). Post-interviews focused on decisions made during the implementation of the lesson and any formative assessment information the teacher used to guide those decisions.

The case study data can be viewed as a small-scale version of the larger professional development model, in that each observation cycle was an opportunity to enact the Data-Driven Instruction process. Our analysis of the case study data is ongoing; we begin with a class observation video to identify possible on-the-spot decisions made by the teacher based on student responses. Interview data can then be analyzed in terms of the teacher's reflections on these choices.

Additional Interventions: The project team was also established as a resource for all participants. The district coaches were involved in planning for the workshops. Non-case study teachers were encouraged to invite team members to visit classrooms; such visits may have included observations or model teaching. For example, a team member presented teaching demonstrations in geometry in teachers' classrooms to address perceived needs in this area. In addition, the project team sent out regular "pulse checks" to encourage teachers to consult assessment data in the course of planning for instruction.

### **Preliminary Results**

Teachers' scores on the LMT increased from pre- to post-assessment in all areas, although only the change in Geometry was statistically significant. These results are not surprising, as we can expect K-5 teachers to have extensive knowledge of Number and Operations, and so have less room for increase in this area. It is not surprising that Geometry is an area with the greatest potential for growth for elementary teachers.

The design of the professional development model included an early emphasis (August 2012 workshop) on Number and Operations, a focus on Algebra in the first intermediate workshop (October 2012) and a later focus on Geometry (February 2013). This sequence aligns with the district curriculum, in that more algebraic and geometric concepts are planned for later in the academic year. Teachers were supported across the academic year as they analyzed assessment data in all three areas and integrated their analyses into instruction.

Our preliminary conclusion is that project activities can have a positive effect on teachers' mathematical knowledge for teaching as measured by the LMT assessment instrument. Coordination of content and pedagogy within project activities, aligned with the district curricular calendar, can maximize the effect on classroom instruction.

A major objective of the project was to develop teachers' ability to interpret and use assessment data as part of their instructional planning. We have evidence from the case study data that teachers are able to articulate their interpretations of assessment data and how these interpretations guided their instructional choices. Teachers typically made statements similar to "They have a very good understanding of addition . . ." or "They weren't real strong in their fraction knowledge." Such statements may have been supported with specific evidence from district assessment sources, such as: "The 4<sup>th</sup> graders have come in with a lot of information on the basics of multiplication." Statements such as this last example were connected to how having that information from district assessments guided planning for current lessons.

A second theme within the interview data relates to instructional practices. The August 2012 workshop introduced the *5 Practices* framework (Smith & Stein, 2011) for planning for mathematical discussions. Teachers were able to articulate how these practices framed their planning for a lesson as well as how the framework supported their formative assessment observations within the lesson. For example, one teacher shared how she had anticipated what her students might do with a particular task; within the lesson, she observed variations of what she had anticipated, and was able to articulate how these observations changed her plans for the remainder of the lesson. We hypothesize that the *5 Practices* supported her not only in her instruction, but may also have provided her with language to articulate how she was able to integrate assessment and instruction.

Our preliminary conclusion is that the planning framework can support teachers' implementation of instructional strategies that have potential to develop mathematical practices within the Common Core Standards. Explicit support of teachers' use of the framework can contribute to the integration of assessment data and instructional planning. This preliminary conclusion is supported by the positive reaction to the teaching demonstrations in non-case study classrooms; teachers felt empowered to replicate the approach to teaching modeled by the team member.

### **Discussion/Invitation for feedback**

We view this as a work-in-progress in terms of designing a replicable professional development model. We are encouraged by the preliminary results, yet acknowledge that these participants were carefully selected and thus represent a unique group of potential change agents in their respective schools. Adjustments to the model will be needed to address a larger audience. Our initial findings support other work related to professional development; for example, Blank, et. al. (2007) found that effective programs engage teachers in specific pedagogical practices and specific content. Our use of the *5 Practices* and *Essential Understandings* series provided means by which teachers could articulate challenges and choices within their work. Further, Reeves (2010) advocates focusing on student learning and reflection on decisions made within collaborative teams. Our focus on interpretation of district assessment data allowed teachers to design instruction to best meet the needs of individual students.

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## HAWAII INTERNATIONAL CONFERENCE

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**Title:** *Academic content combined with English in secondary schools: Bolstering urban teachers' knowledge and skills for the instruction of English Learners*

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**Format:** Paper Session (Paper 2): **Preparing Teachers for Multicultural Classrooms: OELA/NPD Grantees**

### Abstract:

Academic Content Combined with English in Secondary Schools (ACCESS), funded by OELA/NPD/U.S. Department of Education, provides secondary mainstream teachers of English learners (ELs) a cohort based professional development program. ACCESS, as a university-school district program supports mainstream teachers requiring additional professional development through graduate courses tailored to meet the district needs. Participants completing the full program met the Arizona Department of Education course requirements for full ESL endorsement. The program provides a robust professional development that is coherent to the needs of the district and secondary teachers instructing in an urban school district.

Recent changes in Arizona state mandated policies includes the implementation of Sheltered English Immersion (SEI) as statutory mandate (A.R.S § 15-756.01) for all teachers as well as that all instruction in Arizona schools is in English, Prop 203. The Arizona context of restricted language policy and governance over teacher preparation for ELs has impacted teacher preparation for ELs and SEI (Arias, 2012). ACCESS's professional development model includes preparation that develops cultural and linguistic awareness, instructional knowledge (Lucas, Villegas & Freedson-Gonzales, 2008; Tellez-Waxman, 2006; Walqui, 2008) and opportunities to reflect on the situational context of ELs in Arizona as means to develop affirming dispositions ( McAllister & Irvine, 2002; Villegas & Lucas, 2002; Walker, Shafer & Liams, 2004). The ACCESS program utilizes the following research: Cochran-Smith & Lytle, 1999; Echevarria, Vogt, & Short, 2009; Garet, Porter, Desimone, Birman & Yoon, 2001; Faltis & Coulter, 2008.

The research informed ACCESS's curricular and programmatic aspects for developing secondary mainstream teacher's knowledge and skills. The curricular framework focused heavily in developing teachers' understanding of second language acquisition (Lucas, Villegas & Freedson-Gonzales, 2008) and parents and community (Villegas & Lucas, 2002). Through individual and collaborative assignments participants built a greater understanding of assessments, biliteracy and the practical application of scaffolding as part of lesson modification (Walqui, 2008). From 2008 through 2012, 99 teachers completed extensive professional development of ESL coursework from

12 urban schools. Approximately 83% percent completed the entire 18 credit program. Of those who completed the entire program, over 50% entered into a graduate Masters program in Curriculum and Instruction. Participants represent a wide variety of curricular content areas of instruction, however the majority of teachers in the program instruct English (n=27), math (n=22), social studies (n=14) and science (n=10). While yearly cohorts ranged from 15 to 24 teachers with varying levels of teaching experience, more than half of the program's participants had from one to five years of teaching experience.

The ACCESS program evaluation utilizes qualitative and quantitative data including pre and post surveys, an in-depth post participation survey with emphasis on knowledge, skills and practice of previous cohorts 2008 through 2011, interviews of teachers and administrators, and teacher observations using a SIOP protocol (Echevarria, Vogt & Short, 2009).

For the overall program evaluation, participants completed a pre-assessment at the program's orientation and a post-assessment at the last class meeting. In comparing pre and post data that asks participants to provide an overall proficiency level on various dimensions related to the instruction of English learners, the data reveal that overall participants perceive their understanding and skill level to be higher post professional development in most areas. This also corresponds to the in-depth of study of four cohorts completed in 2011. In review of participants' responses to open-ended questions, it is noteworthy that teachers post-training utilize course language and provide a rationale for implementing a particular strategy or for allowing students to use their first language in class. Interviews with participants indicate that teachers are more cognizant of EL instructional needs, role of pacing, and language levels in addition to other instructional strategies. The in-depth study completed in 2011, indicates that teachers post professional development understanding of what is important to know about teaching ELs includes an increased awareness of the socio-political tensions surrounding instructing ELs from the student/parent/school perspective.

The data which was triangulated from a number of sources, indicate an overall understanding of the importance of EL students' language and culture, the need for scaffolding and the importance of advocacy for EL students. The grant's result is significant for both teacher professional development and university partnership programs focused on teacher development and for districts seeking to ameliorate instruction for ELs in order to improve academic success.

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## TL3C as An Innovative Approach to STEM Education and Supporting Teachers in 21<sup>st</sup> Century Classrooms

### Abstract:

Mesa Community College's Mission states "MCC excels in teaching, learning, and empowering individuals to succeed in our local and global community." The Teachers of Language Learners Learning Community (TL<sup>3</sup>C) Project is designed to directly support this mission by focusing on teaching and learning that empowers current and preservice teachers and paraprofessionals to support a community need. At the national level, between 1979 and 2008, the percentage of school-aged English language learners (ELLs) has increased from 9 to 21 percent of the population in this age range (The Condition of Education, 2010). Locally, K-12 schools work with students from 66 countries speaking 50 different languages at varying proficiency levels.

The TL<sup>3</sup>C Project has partnered with existing school districts that represent this diversity and are focused on both language development and the acquisition of content-specific knowledge. While linguistic diversity provides rich opportunities for language learning, it also presents a need for highly qualified teachers and programs that ensure that all students are provided with an equitable education. In an effort to support this community need, the TL<sup>3</sup>C has two goals:

1. Increase the pool of effective teachers of language learners (TLLs).
2. Improve instruction and support TLLs in various programs at local Title I schools.

We propose to share the progress we have made in addressing goal 2, specifically in regard to STEM education. By providing STEM training by professors, highly qualified teachers, and leaders in the teaching community through the Arizona Geographic Alliance (AzGA), we are providing support to teachers working with CLD students. The AzGA is a network of professors, teachers and community partners highly experienced and knowledgeable in training teachers to effectively teach core-content aligned to state and national standards through curriculum integration (i.e. GeoMath, <http://alliance.la.asu.edu/geomath/general.html>). These trainings support teaching content using current best teaching practices and strategies for language learners. The outcome is professional development for inservice teachers by top Arizona educators in teaching best-practices while utilizing STEM lessons aligned to English Language Proficiency Standards and the newly adopted Common Core State Standards (CCSS).

To date, fifteen lessons have been created. All TL3C lessons are teacher-created and teacher-tested. Each lesson contains a lesson plan, adaptations for English learners, handouts, answer keys and resources for teachers. We propose a hands-on workshop in which we would walk participants through three lessons in a hands-on, engaging, and interactive format. Participants would leave with access to TL3C lesson materials.

Lights! Camera! Thermo! – Student-developed video for learning in engineering thermodynamics

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#### Abstract

Current college students are accustomed to documenting and sharing their experiences through text, photo, and video, thanks to the ready availability of all of these through personal portable devices. The democratization of video production and access has led to the possibility to both teach and learn with video as never before. This work seeks to capitalize on student expectations and the current technological environment to bring the benefits of both teaching and learning with video into core technical undergraduate engineering courses. Specifically, in this work we ask student teams to create short, targeted, easy to understand videos about concepts in thermodynamics, and then invite them to watch the faculty-vetted library of videos developed by their peers at their own and two collaborating institutions. We are studying changes in students' conceptual learning as a result of participation in this program, and are building a repository of accurate, engaging, videos for thermodynamics learning that will ultimately be shared with other instructors and the public.

Title:

Scholarly Encyclopedias: The Missing Link in student research processes?

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Abstract:

For students, the most difficult part of doing research papers is the start: narrowing topics, understanding context and developing vocabulary - exactly where scholarly subject encyclopaedias can help. Results from a recent survey at our institution showed that teaching faculty undervalue encyclopedias; a follow-up workshop built awareness and appreciation of these rich resources. We explore the benefits of scholarly subject encyclopedias and how to integrate them into academics' teaching resources and students' research practices.

A recent comprehensive study on student research habits has shown that students find the start of the research process most troublesome (Head and Eisenberg, 2009). Without the background knowledge possessed by their instructors, deciding on and narrowing a topic is difficult, and even finding good keywords to search with is problematic as students encounter new topic areas each with its own particular jargon. Often they resort to the tools they know best, Google and by extension Wikipedia which in general provide results that will not satisfy university or even high school teachers. Separate studies indicate that faculty are often less than complimentary about students' abilities to find, read and use information to complete assignments (Blau, 2012; Bury, 2010; Gullikson, 2006; Hrycaj & Russo, 2007; McAdoo, 2008; Raven, 2012; Saunders, 2012; Webber, Boon, & Johnston, 2005).

This gap between the sources and information students find and use, and what faculty wish they would use is the subject of a number of projects at our institution and elsewhere (Avdic & Eklund, 2010; Becker, 2009; DaCosta, 2010; Griffiths & Brophy, 2005, Purdy, 2012) Faculty would like students to use scholarly articles and monographs, which students find difficult to understand, particularly in their first year in a discipline (French, 2005; Joliffe & Harl, 2008; Manarin, 2012). When students arrive in the library struggling with a research question, librarians often suggest scholarly encyclopedias a starting point. At our institution, these suggestions are often met with some variation of "My prof told me we can't use encyclopedias". Given that libraries are still acquiring scholarly, subject encyclopedias in significant numbers (East, 2010; Korah, Cassidy, Elmore & Jerabek, 2009), this prohibition requires some exploration to unpack the divide between sources librarians know will help students and what faculty allow students to use.

Faculty, as experts, rarely need to consult subject encyclopedias in their own disciplines, having mastered the threshold concepts and vocabulary long ago, and having developed an understanding of what, and often more to the point who, is important in their disciplines (Matteson, 2012). Having been immersed in a discipline, they may not remember what it's like to not know the terms and themes, and therefore may not realize the value of subject encyclopedias for novices. As well, they may conflate all encyclopedias with the World Book, or Wikipedia, and consider them inadequate resources for postsecondary students. However scholarly subject encyclopedias function as the very "facilitative intermediaries" (Dove & Becker, 2012, p.169) students need most to gain an understanding of information in a new discipline.

Scholarly subject encyclopedias serve as entry points to a discipline. They provide generally brief entries on key aspects, people, milestones, theories and issues, usually written by experts in the field. These entries are designed as introductions with the particular audience of those new to a discipline in mind, and this is reflected in the language with definitions provided for unfamiliar terms and in the level of depth provided. As well, the entries generally have a structure that is more familiar and more accessible to students than journal articles. In most encyclopedias the entries include references to key sources, and links to other useful entries to allow for targeted browsing within a subject. These links have been greatly improved with the advent of electronic reference tools and not only work within encyclopedias but among different titles by the same publisher (Dove & Becker, 2012). While most are available online with a subscription, there are also a few freely available examples such as the Stanford Encyclopedia of Philosophy. Despite these characteristics of both cognitive and technical accessibility, the potential of scholarly subject encyclopedias to serve as gateways to disciplinary knowledge is not widely recognized by teaching faculty.

This lack of understanding can be seen in a recent survey of faculty at our institution that indicated faculty did not value subject encyclopedias very highly. The same survey indicated general dissatisfaction with student research skills, particularly in first year. This dissatisfaction extended to students' ability to read scholarly articles, the resource most faculty rated most important for students to use. Subject encyclopedias might well serve as the bridge between students and the scholarly conversations evident in peer-reviewed articles. Indeed, faculty who attended a workshop on the survey results saw the potential for these resources when a select few were demonstrated.

Seeing the challenge of reconciling faculty expectations with student needs as chiefly one of raising awareness, librarians at our institution are implementing a multi-pronged campaign. In the Fall of 2013 we will be delivering workshops to faculty, to introduce them to resources in their subject areas, and providing easy links for inclusion in course websites. We will also be asking faculty to help provide annotations for these subject encyclopedias as a way of familiarizing them with the content of the resources, and encouraging students to access them.

In addition, in the research classes we teach students, which are integrated into the curriculum, subject encyclopedias will be highlighted as appropriate sources with explicit instruction around what parts of the research process they can help with. This will be complemented by a new discovery system on our webpage which will make the content within online encyclopedias easier to access. We anticipate that

growing awareness of the information in these sources may lead to increased use and perhaps new ways of incorporating and using content from the sources to support teaching.

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Online Free Encyclopedias you can use:

Encyclopedia of Earth

<http://www.eoearth.org/>

The Encyclopedia of Life (biological sciences)

<http://eol.org/>

Scholarpedia

[http://www.scholarpedia.org/article/Main\\_Page](http://www.scholarpedia.org/article/Main_Page)

The Canadian Encyclopedia

<http://www.thecanadianencyclopedia.com/index.cfm?PgNm=HomePage&Params=A1>

Stanford Encyclopedia of Philosophy

<http://plato.stanford.edu/>

## Virtual Clinical Practice: An ESL Virtual Classroom

The recent report from American Association of Colleges for Teacher Education's (AACTE) Professional Education Data System (PEDS) (2013), reminded us that in all teacher preparation programs in four year universities, clinical practice is a critical part of those programs. It is important to note that not only are teacher candidates expected to complete a student teaching experience at the conclusion of their program of study, but in addition, they are required to engage in a substantial amount of field experience when they are enrolled in their methodology courses. Additionally, the report indicated that there is an abundance amount of technology that is embedded throughout each of programs.

Many of our online pre-service teacher candidates who are required to complete two English as a Second Language (ESL) methods courses, struggle to find quality English language development or ESL classrooms that are taught by highly qualified and effective ESL teachers. Rural areas may be homogenous and they may lack language minority groups or even teachers who are knowledgeable about ESL research-based best practices. To alleviate this problem, one of the College's administrators collaborated with one of the college's full time online faculty members as well as the university's academic web services to develop a virtual ESL Classroom. The Virtual ESL Classroom consists of an avatar ESL teacher in action. She is replicating a Sheltered Instructional Observation Protocol (SIOP) lesson plan in which she is teaching the students how to extract iron from everyday cereal. She gives direct instruction on magnets and extraction; provides engagement opportunities for students to interact with one another in their group setting, and she interacts with the virtual students. An accompanying video window shows a real teacher that narrates and comments on the lesson. This virtual site provides our learners with an equitable experience. They witness the same instructor that is employing effective and research based best practices with a diverse group of students.

The 10 minute video will be shown to the participants followed by a discussion on the possibilities of varied applications of the Virtual ESL Classroom, including a simulated real-world experience and possible asynchronous discussions.

# **An Overview of IntelliMetric and Applications of Automated Essay Scoring to Writing Instruction and Chinese Language Content**

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## **Introduction**

Automated Essay Scoring (AES) engines have demonstrated the capability to accurately score written essay and short response content with quality at least parallel to human scorers, delivered more rapidly and typically at significantly reduced cost. Shermis and Burstein (2003) summarized the various AES engines in use at the time. Shermis and Burstein (2013) have similarly summarize the current status of AES engines from a contemporary perspective.

AES engines emulate the processes carried out by human scorers in writing assessment. AES engines seek to identify features of scored essays that are associated with high rater assigned scores, developing models that emulate the results of the scoring process used by human raters. AES systems are "trained" with a set of previously scored responses drawn from expert raters or scorers. These papers are used as a basis for the AES engine to "learn" the rubric and infer the pooled judgments of the human scorers. The AES engine internalizes the characteristics or features of the responses associated with each score point and applies this intelligence to score essays with unknown scores.

AES engine utilize the same holistic scoring approach commonly employed by human raters to evaluate large-scale writing assessments. At a high level, the holistic score of a response represents the overall impression that it makes on a reader. The score provided by this reader (rater) is typically based on a formal scoring rubric, which focuses on the discourse elements, content, organization, word use, and grammar/mechanics of the response as a whole. To

become proficient and reliable in scoring responses to a given prompt, expert raters are provided anchor papers specific to the prompt, are given scores to those papers, and are taught why each paper should receive a certain score. The human raters are given additional scored papers for training and are ultimately asked to score some papers on their own. If the human scoring is acceptable with regards to a set standard of agreement with other raters, the human rater is then allowed to score new essays for that particular prompt.

Much like human scorers who are generally trained to score a specific prompt, AES engines create a unique solution for each prompt. This process leads to higher levels of agreement between the scores assigned by AES engines and those assigned by human scorers.

### **Overview of the Scoring Process**

AES engines typically use a multi-stage process to evaluate responses. First, the scoring engine is exposed to a subset of responses with known scores from which it derives knowledge of the scoring scale and the characteristics associated with each score point. Second, the model reflecting the knowledge derived is tested against a smaller set of responses with known scores to cross-validate the model. Third, after making sure that the model is scoring as expected, the model is applied to score novel responses with unknown scores. Responses that appear off topic, are too short to score reliably, do not conform to the expectations for edited American English or are otherwise "unusual" are identified as part of the process.

## **Applying AES to Improving Student Writing**

### **INTRODUCTION**

Over the years and decades, administrators and teachers alike have contended that students learn to write proficiently through practice. Numerous writing curricula have been designed around this principle, backed by substantial amounts of public and private funding to ensure implementation. However, is this basic principle actually true? Is this core belief true for all students, regardless of age, gender, or ethnicity? What is the best, most efficient and optimal way to improve writing?

Finally, if students practice writing often, does it actually improve their writing skills?

A significant amount of time and effort have gone into researching this principle, documenting writing programs and concrete evidence to either support or negate it. While the answer to each of these questions may not be a resounding, unequivocal answer of "yes", research and analysis has identified a number of examples which support this principle.

### **CURRENT RESEARCH**

While there may be some disagreement amongst researchers and educators on the best strategies and techniques to improve writing ability, existing researchers agree that two of the factors that will improve writing ability are:

- 1) increasing the amount of writing that students do
- 2) receiving timely and appropriate feedback on this writing.

### **Practice**

Students learn to write by writing. Studies have shown that the amount of writing that students do is positively related to writing ability (Chircop, 2005; Coe et al., 1999; Boersma, Dye, Hartmann, Herbert, & Walsh, 1997; Cotton, 1988). Writing-intensive programs that require multiple drafts and a high volume of written work, such as those using writing portfolios or software to leverage success in writing, have been particularly effective in increasing writing aptitude across a wide range of students of varying abilities (Chircop, 2005; Boersma et al., 1997). These programs have also proven to be effective regardless of gender, ethnicity, or English language proficiency (Han, 2009).

Writing effectively in a variety of modes is a skill that every student must possess. However, in many schools, the amount of writing instruction provided to students is lacking. According to an NAEP report, many students are spending a negligible amount of time completing writing assignments. The National Commission on Writing advocates doubling the amount of time students spend writing, with writing skills being taught at all grade levels and across all subject areas (2003). Researchers agree that students

must be given daily opportunities to write in order to become proficient writers (Boersma et al., 1997).

### **Effective and Timely Feedback**

Timely feedback received in response to student writing is also essential in increasing writing ability. Studies have indicated that when feedback is received often, and in the early stages of writing, it is more likely to be judged by the student as valuable. This feedback then has a positive effect on the quality of the writing (Cowie, 1995). Feedback that is given later in the writing process, or after the final draft has been submitted, is often not followed in future drafts and writings (Cowie, 1995). The use of peer editing and evaluation in providing immediate feedback has also been shown to be beneficial in creating high-quality writing. When such procedures are used, students receive punctual, clear feedback, helping them correct errors (Cotton, 1988). Timely and appropriate feedback is vital in increasing student writing ability.

### **Assisting Writing Instruction using Automated Essay Scoring (AES) Technology**

For nearly fifty years, researchers have attempted to utilize developing technology to independently rate a piece of writing. Since the mid 1960's, experimenters have used modeling techniques, regression, and statistical analysis to quantify and identify the features of writing. Overall, experimentation has had varying amounts of success in evaluating the quality of a piece of writing independent of a human rater. Over the years, a multitude of tools have been devised by assessment companies to accomplish this feat.

Developed by Vantage Learning in 1998, IntelliMetric® is an automated essay scoring tool that uses Artificial Intelligence and Natural Language Processing to score writing on a pre-established scale or rubric. It has been used successfully to score open-ended essay-type assessments across a variety of topics and genres, providing detailed, descriptive feedback to users in a matter of seconds.

In order to establish the standards and features of "good writing", IntelliMetric® is "trained" with a set of

previously scored responses containing "known score" marker papers for each score point. These papers are used as a basis for the system to infer the rubric and the pooled judgments of the human scorers. Relying on Vantage Learning's proprietary CogniSearch™ and Quantum Reasoning™ Technologies, the IntelliMetric® system internalizes the characteristics of the responses associated with each score point and applies this intelligence in subsequent scoring. It is essentially a learning engine that internalizes the characteristics of the score scale through an iterative learning process. In essence, IntelliMetric® internalizes the pooled wisdom of many expert scorers.

IntelliMetric® is trained to score essays much the same way as expert human raters are trained. Experts are provided anchor papers specific to the prompt, are given scores to those papers, and are taught why each paper should receive a certain score. The human raters are given additional scored papers for training and are ultimately asked to score some papers on their own. If the human scoring is acceptable with regards to the standard, the human rater is then allowed to score new essays for that particular prompt. Similarly, IntelliMetric® is trained using a set of essays which have already been scored. This training allows the scoring engine to recognize what discourse elements of an essay written to a specific prompt are desirable. The IntelliMetric® engine learns what it means to be an essay earning each score point on the rubric. As a result of this training, a prompt-specific model is created. This model can be used to score an infinite number of additional essays submitted to that prompt. Every IntelliMetric® model must go through this rigorous process, starting with expert human scoring, training, and validation. If the new model meets the criteria of acceptable performance data (measured in terms of score agreement with experts), the model is available for use to provide immediate scoring.

## **RESEARCH METHODOLOGY**

The purpose of this research was to determine if the frequency of writing, coupled with the immediate feedback offered by the writing program utilized, resulted in an improvement in writing quality. In order to determine an improvement in writing quality, the total score improvement, from first submission to final submission to the same writing task (or prompt) was used. Users were permitted to submit their responses an unlimited number of

times. The total improvement per prompt indicates the difference between the average scores of the first and final submissions. To determine overall writing ability improvement over time, the difference in the average score of responses submitted at the inception of the program compared with the average score of responses submitted at the end of the school calendar year was calculated.

### **Data Collection**

The data was collected through student usage of a writing platform scored using IntelliMetric. From January 2011 through May 2011, over 800 students submitted nearly 7,000 written submissions across the thirteen unique writing prompts.

Each response was evaluated on a 6-point scale, developed from a pre-established scoring rubric. In addition to a Holistic Score, each response was evaluated on five domains:

**Focus & Meaning (Focus):** The extent to which the response establishes and maintains a controlling idea (or central idea), an understanding of purpose and audience, and completion of the task.

**Content Development (Content):** The extent to which the response develops ideas fully and artfully using extensive, specific, accurate, and relevant details. (facts, examples, anecdotes, details, opinions, statistics, reasons, and/or explanations)

**Organization:** The extent to which the response demonstrates a unified structure, direction, and unity, paragraphing and transitional devices.

**Language Use, Voice & Style (Language):** The extent the response demonstrates control of conventions, including paragraphing, grammar, punctuation, and spelling.

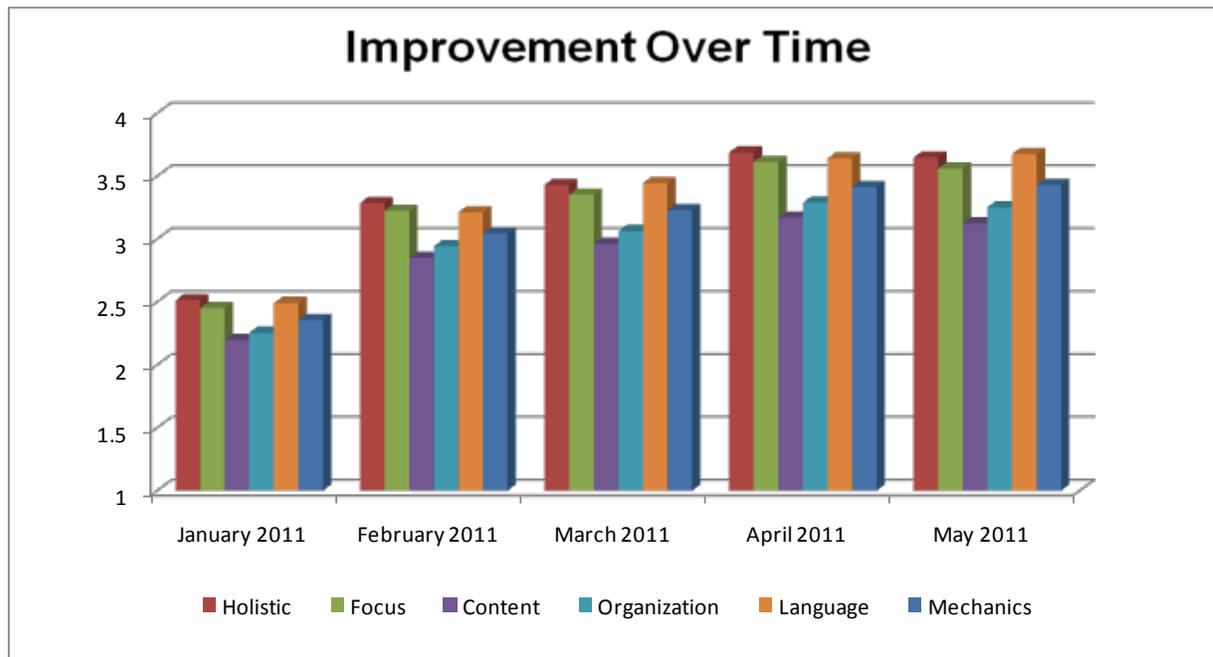
**Mechanics & Conventions (Conventions):** The extent to which response demonstrates an awareness of audience and purpose through effective sentence structure, sentence variety, and word choice that creates tone and voice.

## **RESULTS**

### **Writing improvement over time**

The writing program utilized for this research study required users to submit responses throughout the semester as part of their course study . Nearly all students using the program at the beginning of the time period continued to use the program until the end of the semester. The improvement in writing score over the length of the program is displayed in Table 1 below. Improvement in writing score is based upon the average score of all responses submitted during the time period. All responses were scored by IntelliMetric® on a 6-point scale. The holistic score, plus its corresponding five domain scores, are shown in the table.

**Table 1. Improvement over time (average submission score across all users)**

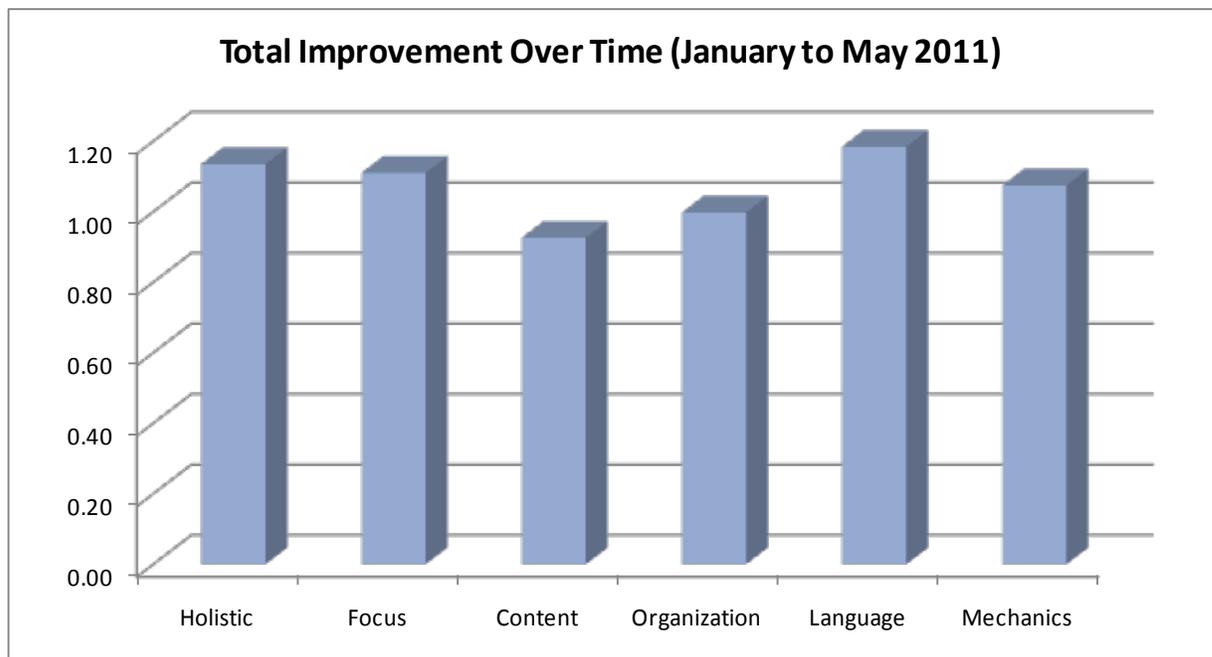


Overall, the table shows that the holistic score and every domain score increased over time. The greatest improvement in scores occurred after the first month of the program (from January 2011 to February 2011), with additional improvement noted over the next few months. The improvement in scores leveled off in May 2011, but increased slightly for the "Language Use, Voice, and Style" domain.

The total score improvement, after five months of usage of the writing program, is shown in Table 2. To determine the following calculations, the average score of the writing

submissions in January 2011 for each of the scores (holistic plus five domains) was subtracted from the average score of the writing submissions in May 2011. All responses were scored by IntelliMetric® on a 6-point scale. The holistic score, plus the corresponding five domain scores for a given writing submission, are shown in the table.

**Table 2. Total improvement in writing submission score**



Total score improvement over five months time ranged from 0.93 points on the "Content" domain to 1.18 points on the "Language Use, Voice, and Style" domain. This score improvement represents an increase of 42% to 48% in score on a 6-point scale.

**Writing improvement (First Submission versus Final Submission)**

For each of the prompts utilized in the writing program, in order to determine individual student writing improvement, the paired scores of each student, based on their first submission and final submission scores to the same writing task (or prompt) was used. The total improvement for each

prompt indicates the difference between the average scores of the first and final submissions. Users were permitted to submit their responses an unlimited number of times. While the majority of students submitted two or three revisions, some students submitted as many as five to ten or more revisions.

The writing improvement for students, across each prompt, is shown in Table 3. The average writing improvement across all prompts is shown as the final row of data.

**Table 3. Writing improvement, by prompt.**

<b>Writing Prompt</b>	<b>First Submission Score</b>	<b>Final Submission Score</b>	<b>Difference in scores</b>	<b>Percentage Increase</b>
Conflict	3.61	4.37	0.76	20.94%
Crisis at Canoe	2.89	3.12	0.23	8.04%
Customer Complaint	2.95	3.66	0.71	23.96%
Customer Concern	3.29	3.80	0.51	15.53%
Leadership & Followership	3.48	3.76	0.28	8.03%
Letter of Interest	3.77	4.06	0.29	7.75%
Motivation	3.43	3.91	0.48	14.02%
Organizational Change	3.51	3.85	0.34	9.66%
Performance Evaluation	3.51	4.07	0.56	16.06%
Personality	3.39	3.90	0.50	14.86%
Restaurant Mishap	3.28	4.04	0.76	23.15%
Saving Money at the Office	3.69	3.88	0.18	4.95%
Who Done It?	3.04	4.02	0.98	32.19%
<b>Average of all prompts</b>	<b>3.37</b>	<b>3.88</b>	<b>0.51</b>	<b>15.13%</b>

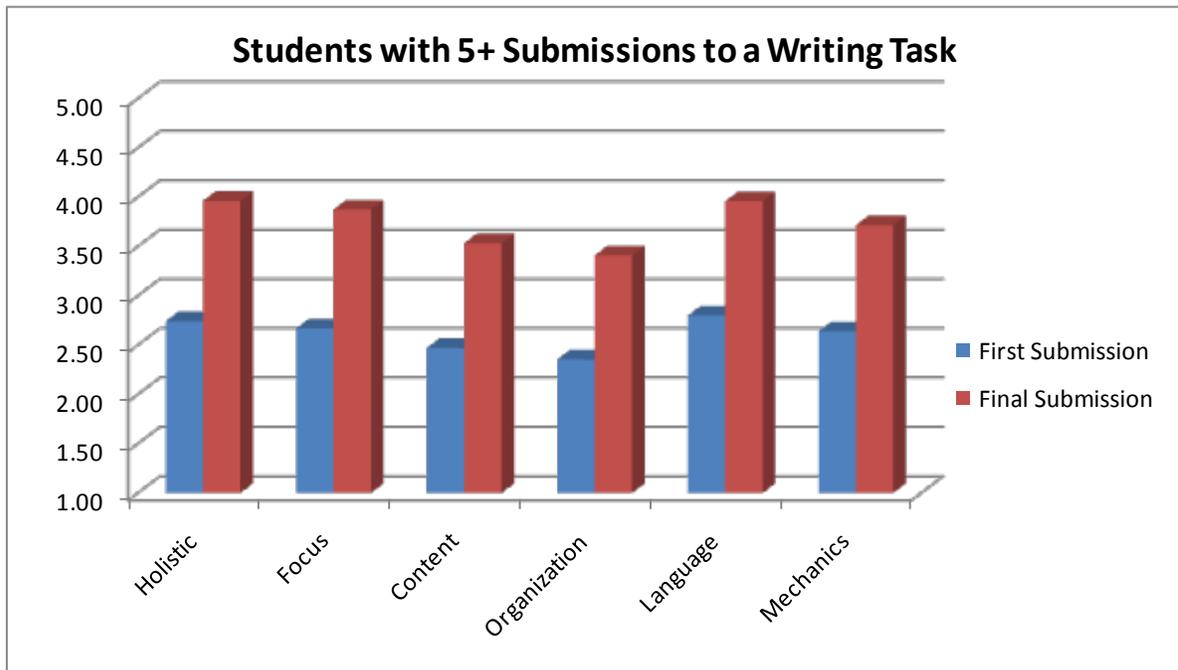
Score improvement was noted for every one of the thirteen prompts, ranging from a 4.95% increase in score (on a 6-point scale) for the writing task "Saving Money at the Office" to a 32.19% increase in score on the writing task "Who Done It?".

**Writing improvement for students submitting multiple submissions**

Some students utilized the writing program to a much greater extent than others. While many students may have only submitted two draft responses to a given writing task, some students submitted many additional responses. A

meaningful percentage of students submitted as many as ten or more revised submissions to the same writing task. The writing improvement for all students who submitted five or more responses to a specific writing task is shown in Table 4. To calculate the overall improvement in writing quality, the paired scores of each student, based on their first submission and final submission scores to the same writing task (or prompt) was used. The total improvement for each prompt indicates the difference between the average scores of the first and final submissions.

**Table 4. Writing improvement for students submitting five or more submissions to a writing task.**

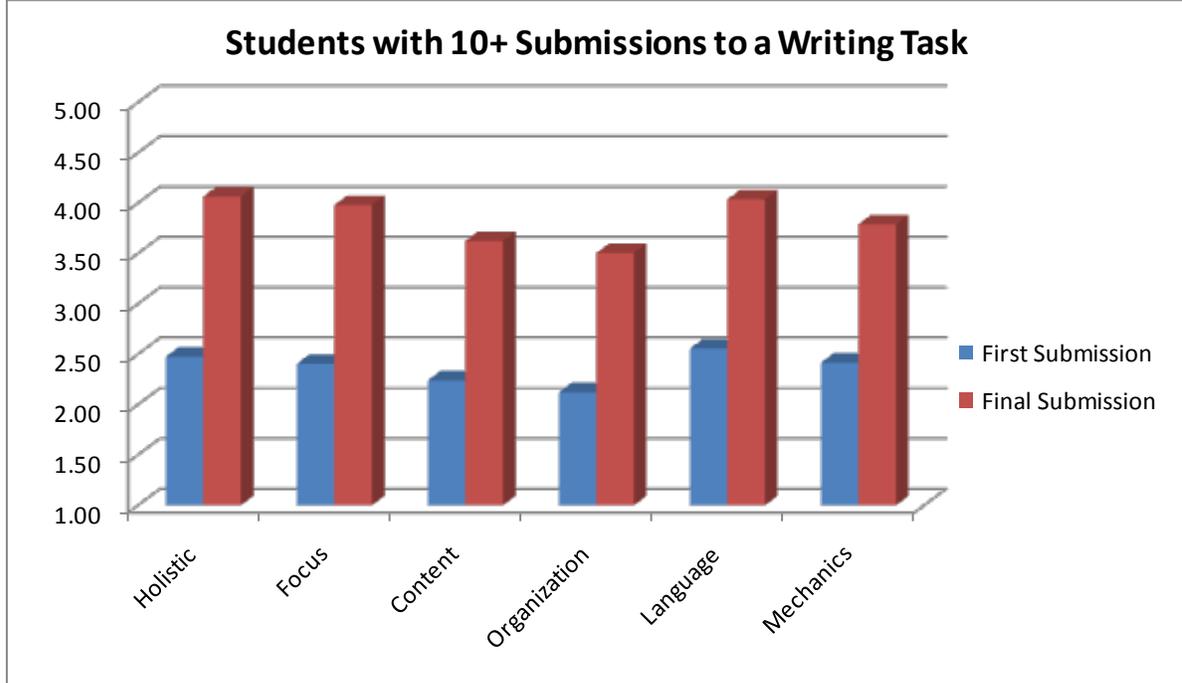


A score improvement ranging from 1.05 to 1.22 points on a 6-point scale was found. This score improvement translates to an increase in writing score of between 40.82% and 44.49% from first submission to final submission.

The writing improvement for all students, regardless of prompt, which submitted ten or more responses to a specific writing task, is shown in Table 5. To calculate the overall improvement in writing quality, the paired scores of each student, based on their first submission and final

submission scores to the same writing task (or prompt) was used. The total improvement for each prompt indicates the difference between the average scores of the first and final submissions.

Table 5. Writing improvement for students submitting ten or more submissions to a writing task.



A score improvement ranging from 1.37 to 1.59 points on a 6-point scale was found. This score improvement translates to an increase in writing score of between 56.83% and 64.23% from first submission to final submission.

Overall, the data indicates that the students who submitted their writing more often, and utilized the prescriptive feedback provided by the writing program, had the greatest improvement in writing scores for a given writing task.

## CONCLUSION

The data presented in this paper confirms that student usage of the writing program results in an improvement in writing ability and the quality of writing submitted. After just five months of usage, regardless of draft or writing topic, an improvement of 42% to 48% across the writing domains, on a 6-point scale, was noted.

The ability of the program to leverage IntelliMetric® to automatically and instantly score any essay further allowed users to submit multiple submissions to each writing topic. Improvement, from first submission to final submission, was noted for each of the thirteen current writing topics, based on the results of all students. This suggests that

the personalized feedback offered by features of the writing platform was effectively utilized to improve the quality of student writing.

The users who took the most advantage of the instant scoring and revision features of the program had the greatest increase in writing scores. Students who submitted at least five submissions to the same writing topic had the greatest increase in scores. Some students were able to increase their score more than two points on a six point scale, which indicates substantial improvement.

### **Applying AES to Scoring Chinese**

While AES engines have demonstrated success in scoring text written in English, there have been a number of studies evaluating the effectiveness of the models applied to text written in other languages. The remainder of the paper will discuss and evaluate the performance of an AES engine in scoring essays written in Chinese.

#### **Data Collection**

Responses from 613 essays were gathered for use in this study. Essays were written to the same prompt, which focused on Environmental Protection, hand written in Chinese by native speakers who were residents of mainland China, then transcribed into electronic files (in Chinese) for processing.

each essay was subsequently scored holistically by two human native speaking raters, on a six-point scale (scores ranging from 1-6). An AES model was created from the essays submitted as a training set. In addition to the training set, a separate set of 120 essays with human scores were randomly withheld for model validation purposes. A total of 613 essays were used in the evaluation: 493 for model building, and 120 for testing. Table 6 provides the score distributions for the training and validation sets:

Table 6. Counts and Percentages for Training and Validation Sets

Human Scores	1	2	3	4	5	6	Total
Training Counts	39	67	65	112	142	68	493
Training Percent	7.9%	13.6%	13.2%	22.7%	28.8%	13.8%	
Validation Counts	20	6	8	14	40	32	120
Validation Percent	16.7%	5%	6.7%	11.7%	33.3%	26.7%	

### Evaluation

To determine the accuracy of the model on Chinese essay data, three different measures were compared.

**Overall Mean Scores.** The overall means of the human scores and AES scores were contrasted. A general rule of thumb suggests that an accurate model will yield scores in which the overall mean calculated by the AES engine is not significantly different from the overall mean of the human scores.

**Agreement Rates.** Agreement rates between the human and AES engine scores were also calculated. Scores are designated as "exact" if the AES model and human rater agree with each other. Scores are designated as "adjacent" if the AES engine has exact or adjacent agreement with the human score. Finally, scores are designated as discrepant if the human and AES engine scores differ by two or more (non-adjacent) points.

**Pearson Correlations.** The Pearson Correlation between the AES scores and human scores were also calculated. For the purposes of automated essay evaluation, correlations of .70 are considered minimally acceptable, .80 very good and .85 excellent.

### Results

To calculate the agreement rate between the human rater scores and the machine scores on the Chinese data, the human rater score was averaged. If this resulted in a decimal-level score, the score was rounded to the nearest whole number. None of the differences in mean scores

between the individual and rounded human scores were statistically significant.

### **Training Set**

The agreement rates and Pearson correlations between the human-human comparisons and the average human rater score and the AES model are shown in Table 7.

Table 7. Agreement Rates and Pearson Correlation between Two Human Raters and Human versus AES on Chinese N = 493

Comparison	Exact	Adjacent	Discrepant	Pearson Correlation
Human-Human Agreement	43%	100%	0%	0.95
Human - Machine Agreement	49%	96%	4%	0.86

### **Additional Validation Set**

The agreement rate and Pearson correlation between the average human rater score and the AES model score on the Chinese Data are shown in Table 8.

Table 8. Agreement Rates and Pearson Correlation between Two Human Raters and Human versus AES on Chinese, N = 120

Comparison	Exact	Adjacent	Discrepant	Pearson Correlation
Human-Human Agreement	56%	100%	0%	0.96
Human - Machine Agreement	61%	99%	1%	0.93

### **Summary of Results and Discussion**

Overall, the results indicate that AES is accurate in scoring the Chinese essays. In all score comparisons, all calculated scores were either exact or adjacent at 99% for the validation set. Indeed, there was only one discrepant essay in the validation set.

The Pearson correlations between human and AES scores were also very high, ranging between 0.86 (for the training set) and 0.93 (for the additional 120 essay validation set), indicating that the linear relationship was very strong. However, the Pearson correlations between the two human raters for both the training set and additional validation set exceeded the Pearson correlations attained by comparing AES with the average human rater score. Although overall agreement between AES and the human raters was nearly equivalent to the agreement amongst the two raters, the small amount of discrepant scores resulted in a reduced Pearson correlation.

It is possible that the atypical finding of a higher correlation for the validation set than the training set is most likely due to the distributions of 5's and 6's in validation set being higher (33% 5's and 27% 6's for validation, contrasted to 29% 5's and 14% 6's for training).

Similarly, the exact agreement for human raters on the 120 validation essays was higher than for the training sets (56% versus 43%). These results suggest that in the end the Training and Validation samples were fundamentally different.

For both the training set essays and the validation set essays, the exact agreement between the AES model and the human raters exceeded the agreement between the two human raters.

The quality of the training set is of the utmost importance in any AES modeling process. It is vital that all of the following criteria are addressed to optimize the models created:

- Include at least the minimum number of training papers
- Provide sufficient coverage across each score point including the tails
- Include multiple raters if possible
- Ensure the human markers are well calibrated

Despite potential concerns with data quality and rater training and performance, AES engines can produce a functional model, with the promise of producing models of

the same quality as that seen with English language scoring with enhanced data and rater training.

# Innovative Materials For Implementing A Modeling Approach To Algebra For Struggling Students

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## **Abstract**

*This paper describes the development of materials for a course for struggling ninth-grade students who need support while enrolled in an algebra course. The materials, called A Modeling Approach to Algebra (Olson, Olson, Slovin, Venenciano, and Zenigami, 2013b), focus on modeling, one of the conceptual categories of the high school standards, and the Standards for Mathematical Practice from the Common Core State Standards in Mathematics (CCSSM) (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010). This paper describes the materials development, piloting, revisions, implementation, and ongoing research related to the project.*

## **Introduction**

The rigor of the content in the Common Core State Standards in Mathematics raises the bar for student achievement at most levels. This is a pressing concern for students whose studies in the middle school or high school are currently underway. Supporting students as their schools transition to more rigorous standards is of particular interest for teachers and their students involved in first-year high school mathematics. In Hawai'i, the state mathematics specialist for the Department of Education has targeted support efforts at the Algebra I level because this course has traditionally served as the anchor for the high school mathematics courses that follow. Furthermore, with one in three students entering high school in Hawai'i not succeeding in Algebra I, there is a need to improve the success rate (Gottlieb, personal communication, Spring 2011). The Hawai'i Department of Education has initiated a course, *Modeling our World* (MOW I), to create a foundation for students who, as identified by their former teachers, might struggle

with Algebra I. The coursework focuses on the modeling cycle as described in the Common Core Curriculum Standards for Mathematics (CCSSM) (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010), and students engage in the mathematics content through a series of investigations built around engaging problems. It is intended that the course be taken concurrently with Algebra I to enhance learning for students.

The Curriculum Research & Development Group (CRDG) at the University of Hawai‘i, with its long history of successful curriculum development materials, was contracted by the Hawai‘i State Department of Education to develop the curriculum materials, *A Modeling Approach to Algebra* (AMAA), to support students enrolled in MOW I. Pilot and revision phases followed the initial development. This paper describes the research and development, piloting, and implementation of AMAA.

### **Components of AMAA**

**Curriculum.** The Common Core State Standards for Mathematics, together with previous CRDG projects, including *Algebra I: A Process Approach* (Rachlin, Matsumoto, Wada, & Dougherty, 2001) and *Reshaping Mathematics for Understanding* (Slovin, Venenciano, Ishihara, & Beppu, 2003), formed the research base for the development of AMAA. The state mathematics coordinator selected specific standards embedded in the Common Core State Standards of Mathematics aligned with modeling as the structure around which the curriculum materials were to be established. These standards are listed in Table 1.

Table 1

Common Core Standards of Mathematics used as a basis for A Modeling Approach to Algebra

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#### CCSSM Standards used as a basis for AMAA

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Numbers and Quantity, N.Q.1: Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

Algebra – Seeing Structure in Expressions, A.SSE.1: Interpret expressions that represent a quantity in terms of its context. (a) Interpret parts of an expression, such as terms, factors, and coefficients. (b) Interpret complicated expressions by viewing one or more of their parts as a single entity. For example, interpret  $P(1+r)^n$  as the product of P and a factor not depending on

P.

Algebra – Creating Equations, A.CED.1: Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.

Algebra – Creating Equations, A.CED.2: Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

Algebra – Reasoning with Equations and Inequalities, A.REI.3: Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

Algebra – Reasoning with Equations and Inequalities, A.REI.10: Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).

Functions – Interpreting Functions, F.IF.2: Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

Functions – Interpreting Functions, F.IF.4: For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.

Functions – Building Functions, F.BF.1: Write a function that describes a relationship between two quantities. (a) Determine an explicit expression, a recursive process, or steps for calculation from a context. (b) Combine standard function types using arithmetic operations. For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model. (c) Compose functions. For example, if  $T(y)$  is the temperature in the atmosphere as a function of height, and  $h(t)$  is the height of a weather balloon as a function of time, then  $T(h(t))$  is the

temperature at the location of the weather balloon as a function of time.

Functions – Building Functions, F.BF.2: Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.

Functions – Linear, Quadratic, and Exponential Models, F.LE.1: Distinguish between situations that can be modeled with linear functions and with exponential functions. (a) Prove that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals. (b) Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. (c) Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.

Functions – Linear, Quadratic, and Exponential Models, F.LE.2: Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

Functions – Linear, Quadratic, and Exponential Models, F.LE.5: Interpret the parameters in a linear, quadratic, or exponential function in terms of a context.

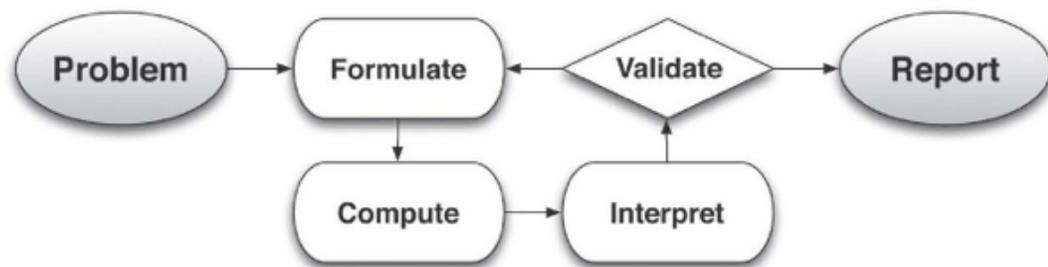
Statistics and Probability – Interpreting Categorical and Quantitative Data, S.ID.6: Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. (a) Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models. (b) Informally assess the fit of a function by plotting and analyzing residuals. (c) Fit a linear function for a scatter plot that suggests a linear association.

Statistics and Probability – Interpreting Categorical and Quantitative Data, S.ID.7: Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.

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The AMAA curriculum materials are organized to align with the five units outlined in the CCSSM for the Traditional Pathway: High School Algebra I. An introduction to the course of study, Unit 0, prepares students for the types of problems and learning experiences in AMAA, many of which may differ from their prior school mathematics experiences. The contents of AMAA units are briefly described below.

Unit 0, Getting Started with Modeling, introduces students to expectations of active learning used throughout the course. Through engaging in problem solving in the investigations, along with an emphasis on validating and communicating results, students have opportunities to explore interesting mathematical concepts and engage in behaviors outlined in the Common Core State Standards for Mathematical Practice (CCSSM, 2010). These behaviors deepen students' understanding of the content and contribute to establishing behaviors that help form a positive learning environment. Furthermore, students are encouraged to use the basic modeling cycle in Figure 1 (CCSSM, 2010, p. 72) to help them organize their thinking and develop confidence and proficiency with modeling. The modeling cycle serves as a means for organizing students' problem solving throughout the course.



**Figure 1**

In Unit 1, Relationships Between Quantities and Reasoning with Equations, students work with concepts they will continue to use in their mathematics studies throughout high school. Investigations in this unit require students to create mathematical models and work with given models to solve a variety of non-traditional and real world problems. Students have the opportunity to build on concepts first introduced in the middle grades such as slope and functions, to reinforce and deepen their understanding of these, to develop more fluent skills related to solving equations and inequalities, and to extend their experiences to new contexts and problems.

Students begin to develop habits of mind essential for success in mathematics, including analyzing and explaining solutions.

Unit 2, Linear and Non-Linear Relationships, extends students' experiences from the previous units to more deeply investigate relationships between quantities. They build and interpret functions that model these relationships in the context of real world and non-traditional problems, and they continue to solve problems that will help them strengthen needed skills. Students add graphs to other forms of representations to visualize trends and patterns.

In Unit 3, Data and Decision Making, the investigations give students the opportunity to judge how well a model fits the data. Students establish consistent procedures in order to collect reliable data from which they generate a model, and analyze data to make predictions and decisions. Students work with lines of best fit and use regression techniques to describe approximately linear relationships between quantities. A capstone project, introduced midway through the unit, allows students to apply the ideas and concepts that they have learned in the unit.

Unit 4, Expressions and Equations, investigations focus on the concepts of generalizing, representing data with mathematical notation, modeling the dynamics of real world interactions, and algebraic reasoning. The mathematics extends some ideas developed in earlier units and provides students with opportunities to explore and work with quadratic and exponential expressions. A major project, making connections to changes in our environment that involve modeling, is an integral part of the unit.

Unit 5, Quadratic Functions and Modeling, investigations begin with a focus on the shape of the quadratic graph and associated equations and move to examining relationships in families of parabolas. Students work with quadratic functions to explore several relationships in specific situations and quadratic functions are used to extend ideas already explored in prior lessons. The project for Unit 5 asks students to examine ways they can connect the mathematics lessons in which they were engaged to situations they might have encountered and to think how a model might explain the nature of the connection or help find a solution. CCSSM standards that served as a basis for Units 1 – 5 are shown in Table 2.

Table 2

## CCSSM Standards Central to AMAA Units

Unit	CCSSM Standards Central to AMAA Units*
1	Numbers and Quantity, N.Q.1 Algebra – Seeing Structure in Expressions, A.SSE.1 Algebra – Creating Equations, A.CED.1 Algebra – Creating Equations, A.CED.2 Algebra – Reasoning with Equations and Inequalities, A.REI.3
2	Algebra – Reasoning with Equations and Inequalities, A.REI.10 Functions – Interpreting Functions, F.IF.2 Functions – Interpreting Functions, F.IF.4 Functions – Building Functions, F.BF.1 Functions – Linear, Quadratic, and Exponential Models, F.LE.1 Functions – Linear, Quadratic, and Exponential Models, F.LE.2 Functions – Linear, Quadratic, and Exponential Models, F.LE.5
3.	Statistics and Probability – Interpreting Categorical and Quantitative Data, S.ID.6 Statistics and Probability – Interpreting Categorical and Quantitative Data, S.ID.7
4	Algebra – Seeing Structure in Expressions, A.SSE.1 Algebra – Creating Equations, A.CED.1 Algebra – Creating Equations, A.CED.2
5	Functions – Interpreting Functions, F.IF.4 Functions – Building Functions, F.BF.1

\*Note. Features of Functions – Building Functions, F.BF.2 were used throughout the materials, but no effort was ever made in the lessons to translate between explicit and recursive formulas. Hence, the materials cannot claim to fully address that standard.

**Materials.** The curriculum materials include Student Pages for students and Teacher Notes and Annotated Student Pages for teachers. Features of these are described in Olson, Olson, Slovin, Venenciano, & Zenigami (2013a). These materials are also available in digital form for the teacher through the use of the PublishView feature in the TI-Nspire teacher software™

developed by Texas Instruments. In the PublishView format the Student Pages, Teacher Notes and Annotated Student Pages are all linked for easy accessibility. In addition, interactive tables and graphs are provided in TI-Nspire documents that are linked to many of the lessons and can be sent to students' TI-Nspire handhelds, when available.

Also available, but only in PublishView, are Unit Assessments that contain supplemental assessment files and Practice Problems. Keeping in line with the goals of the course to help students build their conceptual knowledge, the Practice Problems are organized by the type of process they require in order to be solved rather than directly tied to any one lesson. The categories of Processes, Procedures, Reverse Thinking, Global Comprehension, Example and Non-Example, Errors and Misconceptions, Justifying Multiple Answers, Application of Algebra Procedures, Qualitative, and Divergent are taken from Friedlander & Arcavi (2012). Practice problems are available for the following content in algebra, Problem-Solving Strategies, The Real Numbers, The Language of Algebra, Equations and Inequalities in One Variable, and Graphing, although practice for every process is not available for each selection of content.

### **Implementation**

**Design and Pilot.** The first draft of the AMAA materials was designed from September 2011–August 2012. During the summer of 2012, a five-day training for teachers considering whether to pilot the materials was offered. During the school year 2012–2013, teachers in six schools on four islands piloted the materials. During that time, members of the development team observed MOW classrooms, consulted with those teachers, and conducted follow up professional development. In addition to the 2012–2013 school year pilot, classroom-based research was conducted in a five-week summer class for students entering ninth grade held as part of the CRDG Summer School. Students engaged in selected AMAA lessons from Units 0–5, and researchers collected data on students' solution approaches and explanations, the models they used, and questions asked by the students and the teacher.

**Revision.** Revision of the materials was based on classroom visits to piloting classes, survey forms and responses to reflection prompts completed by piloting teachers, and data from the summer class at CRDG. In June 2013, the revision of Units 0 – 4 was completed and the materials from these units were used to provide professional development for teachers preparing to teach from the AMAA materials during the school year 2013–2014. By October 2013, Units 4

and 5 were revised to complete the course materials. Over 40 teachers in over 15 schools involving about 1700 students are currently using the materials.

**Case Study of Implementation.** Project personnel are currently studying the implementation of the revised AMAA materials during the 2013–2014 school year at two schools. The two schools were selected because of proximity, willingness of teachers and school leaders to be included in the study, and because the students have access to TI-Nspire calculators and the teachers are use the classroom connected TI-Nspire Navigator system. There are four teachers and approximately 300 students involved in the case study.

### **Summary**

The curriculum materials *A Modeling Approach to Algebra* are designed to support struggling ninth-grade students while inspiring all students in the study of mathematics at the Algebra I level. The materials are organized around the Algebra I units associated with the traditional pathways and address specific common core state standards in mathematics that are associated with modeling. Following piloting and revisions, the materials are now in use by students and teachers in Hawai‘i.

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**Title: Historical figures in self-contained virtual worlds**

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**Abstract:**

Historical figures can be emulated with programmable 3D avatars and endowed with simple conversational abilities. An example of this is Freudbot (Heller & Procter, 2011). Students can interact with these intelligent actor agents in 3D virtual worlds such as Second Life, conversing with them about their work, life, and colleagues. This paper will present a self-contained 3D virtual world, complete with an historical figure, situated in an enriched, scriptable, interactive learning environment that the student can log into and converse with using their own avatar. The entire e-learning environment can be stored and distributed to students on a modestly sized USB drive or "stick".

We will present a demonstration of a virtual world, using the OpenSim "sim on a stick" platform. A student would be able to log into this world and meet Freudbot, where they could talk to Freud or interact with some of the objects in the office. This is part of an ongoing research initiative to improve the performance and accessibility of conversational agents in distance education.

## 2014 Hawaii International Conference on Education

1. TITLE: Benefits of Using Rich Student Tasks: Grade 8 Teachers' Perspectives
2. TOPIC AREA: Mathematics education
3. PRESENTATION FORMAT: Paper session
4. DESCRIPTION:

This paper describes some of the benefits of rich mathematics tasks in elementary mathematics, as perceived by Grade 8 mathematics teachers. Through surveys, interviews, and observations, we found that these benefits include: 1) student engagement, 2) the incorporation of multiple strands, concepts, and expectations, and 3) differentiated instruction.

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## **Benefits of Using Rich Student Tasks: Grade 8 Teachers' Perspectives**

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### **Abstract**

*This paper describes some of the benefits of using rich mathematics tasks in Grade 8 mathematics classrooms. Through surveys, interviews, and observations, we found that these benefits include: 1) student engagement, 2) the integration of multiple strands, concepts, and expectations, and 3) differentiated instruction.*

**Keywords:** elementary school, mathematics education, student tasks, teacher education

### **Research Objectives**

The Collaborative Teacher Inquiry Project is a partnership between the University and eight elementary schools in an urban education school district. Administrators and teachers work together with university professors and graduate students to improve and refine educational approaches in Grade 8 mathematics. The goals of this project are to: 1) improve the teaching and learning of Grade 8 mathematics and 2) investigate the Ten Dimensions of Mathematics Education as a conceptual framework for improvement in elementary school mathematics.

Successful mathematics programs are often quite complex. To make it easier to envision and comprehend, components are classified, identified, and described (McDougall, 2004). The National Council of Teachers of Mathematics suggested teachers to use “mathematics tasks that engage students' interests and intellect” (NCTM, 2000, p. 1). McDougall (2004) listed the following as characteristics of rich mathematics tasks (p. 25):

- Present students with a problem to solve
- Allow for multiple possible solutions and/or multiple answers
- Enable all students to participate at their own level
- Allow students to generate and select appropriate problem-solving strategies and/or procedures to solve problems
- Involve multiple representations or models, such as manipulatives, drawings, numbers, or words
- Present math in a context that makes connections to other math topics, other math strands, other subject areas, and the real world
- Lead students to consider important mathematical ideas
- Expect students to reflect on and communicate their thinking
- Often result in unexpected and ingenious solutions

The relationship between mathematics tasks and teaching and learning has been studied by a number of researchers (Kilpatrick, Swafford, & Findell, 2001; Sullivan, Clarke, Clarke & O'Shea, 2009). The 1999 Video Study conducted by Trends in International Mathematics and Science Study (TIMSS) reported that their observed mathematics classes (from seven different countries) spent at least 80% of class time on mathematics tasks (Hiebert et al, 2003). The purposes of using mathematics tasks in classrooms include, but are not limited to: introducing new mathematical ideas, practicing previously learned skills, and assessing mathematical abilities (Walls, 2005). Given the importance of mathematics tasks in the classrooms, an investigation into teachers' perspectives regarding the selection and implementation of mathematics tasks may generate new insight into this essential learning component.

## **Method**

As part of the Collaborative Teacher Inquiry Project, administrators and Grade 8 mathematics teachers from the participating schools met four times at the University. During these sessions, they shared insights regarding mathematics improvement within their schools. In the first session (October 18, 2012), two Dimensions from the Ten Dimensions of Mathematics Education (McDougall, 2004; Ross et al., 2003) were identified by each participating school as their collective focus for mathematics program improvement.

A survey (McDougall, 2004), consisting of 20 Likert (agree-disagree) items, was completed by all participating administrators and teachers. The items on this survey assess attitudes and practices in mathematics education. The scores indicate how the participant's attitudes and practices are aligned with the current mathematics trends (McDougall, 2004; Ross et al., 2003). After completing this survey, teachers reflected upon these results and identified areas for their personal growth. Collectively, the teachers within each school identified their school's goals by selecting two dimensions out of the ten dimensions.

The University team individually interviewed the administrators and teachers involved in this project. The interview consisted of 30 questions, and they are categorized into topics on learning environments, visions of successes, challenging circumstances, and goals in mathematics. At any moment during the interviews, the participants could choose to discontinue. Each interview was approximately 45 minutes in length. They were audiotaped and transcribed.

## **Findings**

### *Student Engagement*

For one teacher, a major goal for Grade 8 mathematics is for students to engage with the

learning process. In order to “make math as fun as possible”, she designs lessons where her students work in groups and compete in friendly manners (T3, Alpha School, Interview). The principal at the school also stressed the need for mathematics to be engaging to students. The learning process should be fun, dynamic, and at the same time, challenging:

I wanted math to be fun, where people can experience, and where it is not just the emphasis on the right answer. That it is about challenging students to really think deeply about whatever problem they have been presented. To me, math is very dynamic and I wanted my classroom to be that way, whether it is working with groups or in pairs, that you are pushing the students' thinking. There is not just that one way of thinking mathematically, but you can use a variety of strategies to get to an answer... The math classroom needs to reflect that. If I see a classroom [where students are] just sitting, to me, that is not engaging. And I find that frustrating. (P, Alpha School, Interview)

Several teachers have listed engagement of all students as an advantage to using rich mathematics tasks. “Student tasks are closely related to engagement in the classroom. Again, it is getting away from the traditional teacher at the front, looking at the board; everyone looking at the front, side by side” (T3, Alpha School, Interview). Another teacher stated: “We chose student tasks [as our dimension of focus] because, again, speaking from the engagement piece, we want them to be collaborative, to enjoy what they are doing” (T1, Omega School, Interview).

The benefits of selecting and implementing engaging mathematics tasks were also highlighted during one of the professional learning sessions at the University. The mathematics implementation teams watched a video clip, which showcased an expert mathematics teacher facilitating her class through the uses of rich tasks. The video clip also included many students' anecdotes about their mathematics goals and successes. After watching the documentation, the implementation teams reflected and discussed their observations. During an interview, one teacher recounted how the video clip encouraged her to look at rich tasks as a tool for student engagement. She recalled: “I watched the samples on the video that show us how engaged kids

are. I like that” (T2, Omega School, Interview).

### *Subjects and Strands Integrations*

Some teachers want to draw connections within mathematics strands, and amongst academic subjects. A teacher expressed the view that “all the subjects that [they] teach support mathematics. Language, visual arts, science and technology, and drum and dance” (T2, Theta School, Interview). Likewise, another teacher found it difficult envisioning mathematics as discrete, unconnected components (T1, Theta School, Interview). “Intertwining” the subjects and “integrating the strands” within mathematics are seen as solutions to this issue.

A few teachers have noted the usefulness of rich mathematics tasks in integrating several mathematical ideas. Prior to selecting a suitable mathematics tasks for her class, one teacher consults the Ontario Mathematics Curriculum (2005) and identifies the expectations and learning goals (T2, Alpha School, Interview). After establishing the overall and specific learning objectives for a unit, a suitable task which addresses all the goals is selected and implemented. Another teacher looked at rich tasks and strands integration as great ways to use instructional time wisely. Rather than spending “too much time” covering each mathematics expectation, clustering several expectations and selecting a task which addresses them is ideal (T3, Beta School, Interview). She described this point of view:

For teaching a certain unit, I look at the curriculum. I look at the expectations that I’m going to be touching upon. So that by clustering [the expectations] together, I’m able to say, “Hey, wait a second. I’m actually able to meet quite a few expectations from this one activity.” So coming up with rich tasks and things that will touch upon several expectations at once is the way to do it. Don’t spend too much time, a month or so, focusing on one specific unit and then running out of time. I tend to cluster and plan ahead. (T3, Beta School, Interview)

Aside from attempting an integration of strands and units within mathematics, an integration of mathematics with language arts was also attempted by some schools and some

teachers. A few ways in which this was accomplished during mathematics lessons included the introduction of picture books (T2, Sigma School, Interview), and the writing of mathematics journals (T1, Delta School, Interview). At Gamma School, the teachers planned to incorporate elements of language arts expectations into their mathematics program. In doing so, the teachers hope to highlight mathematics as more than numbers, and language arts as more than words. A teacher described this:

So we are trying to use cross-curricular approach with math as much as we can. So if we can get language integrated in somehow because we all know application is language based...They also have to learn math is not just about numbers. It is more than that. (T2, Gamma School, Interview)

Another teacher echoed similar sentiments:

I like to integrate mathematics with real-world topics that make sense for kids, not just numbers on a page. They should integrate geometry with language, make kids see problems, and make connections. I think it is important to make it interesting for students. (T3, Theta School, Interview)

### *Differentiated Instruction*

Several teachers have indicated that the utilization of differentiated instruction can help all students improve in mathematics (T1, Theta School, Interview; T1 Omega School, Interview). A teacher observed that, in recent years, there has been “a push for differentiated instruction, which allows students who do not learn well in the traditional ways to find success” (T1, Theta School, Interview). For one teacher, after observing and understanding her students, reasoned that differentiated instruction can assist her in meeting students’ “diverse needs, because everyone is working at different levels and times” (T2, Gamma School, Interview). A teacher from Beta School reflected upon his uses of differentiated instruction in his classroom:

I tried differentiated instruction, doing different things. I like to expose students to different stations to do things so they can do it different ways. I don’t use one way to teach something because of different students’ backgrounds. (T2, Beta

School, Interview)

One principal described ways in which her administration team supports her teachers in meeting students' individual needs:

One is differentiated instruction- understanding that our kids learn differently. We try to communicate that to our teachers through materials or through our [professional development]... We have our model school coach come in and co-teach with our teachers so all our lesson plans will have those concepts. We want people to use manipulatives, to be taking multiple approaches to do performance-based assessment, to try different ways to show learning that is not always through written tests. (P, Beta School, Interview)

The principal continued and suggested a way to support differentiated instruction:

To do rich tasks, things that are higher in the Bloom's Taxonomy scale rather than just the recall. To go deep, so that the mathematical application could be understood... We don't want the drill-skill type of approach and tons of photocopying, everything is all in the textbooks. We want people to use manipulatives, to be able to do performance-based assessment, to try different ways to show learning from kids that are not always through written tests. (P, Beta School, Interview)

Rich mathematics tasks can support differentiated mathematics instruction. With multiple entry points, rich mathematics tasks allow students of varying mathematics abilities to feel successful (T1, Sigma School, Interview). A teacher stated: "I would want to specifically work on more of the rich tasks, open-ended tasks, so all the kids kind of have their starting points" (Sigma School, T1, Interview). Another teacher elaborated:

By encouraging the students and by giving them tasks that challenge them. Giving a task that your higher-level learners can have success and your lower level learners can have success. Being able to plan an activity where everybody be able to achieve some level of success in. (Epsilon, T2, Interview)

Multiple entry points, multiple possible solutions, and multiple representations contribute to "higher order thinking skills like asking questions, not just providing answers" (T1, Omega School, Interview). "There are many different ways to answer the problem and work through it.

This is all awesome” (T1, Omega School, Interview).

### *Collaboration*

While identifying the benefits and uses of rich mathematics tasks, the theme of collaborative practice emerged. The selection of suitable mathematics tasks often required many hours of dedication, and the consultation of numerous resources. Working collaboratively with other teachers, co-designing units, and co-planning common activities were some solutions to this challenge. A teacher commented on this arrangement: “You do the same strands. If you run into problems, you can ask your colleagues. Or if you do the same thing, why not work together and have common activities at the same time?” (T2, Omega School, Interview). Another teacher supported this arrangement: “We knew that we could use each others' strengths and expertise to assist with writing and implementing rich tasks” (T4, Sigma School, Interview).

Several teachers suggested that opportunities to exchange resources amongst teachers from different schools would assist them in locating and sharing excellent ideas. As one teacher voiced: “For goodness sake, just give us a good bank of tasks...Why am I coming up with a rich task when I know there are people that are really good teachers out there that have them?” (T3, Omega School, Interview). Aware of this need, a wiki space was created and monitored by the University team. This wiki space serves as a forum where teachers and administrators in the Collaborative Teacher Inquiry Project share ideas and resources.

## **Discussion**

### *Impact of the Project*

Through this project, the teachers in the eight schools had opportunities to reflect upon and become more aware of their task selection and task implementation tendencies. Some of the benefits of rich tasks were frequently noted and expressed. Such benefits (student engagement,

subject integration, and differentiated instruction) also align with the implementation teams' visions of student success, as well as their goals for their mathematics programs. At the same time, difficulties in tasks selection and tasks implementation were also reported. The lack of time for lesson preparation poses some challenges, but a collaborative approach to lesson planning has shown to be effective.

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## **2014 Hawaii International Conference on Education**

1. TITLE: Improving Teaching and Learning in Grade 8 Mathematics: A Case Study
2. TOPIC AREA: Mathematics education
3. PRESENTATION FORMAT: Poster presentation
4. DESCRIPTION:

This paper describes the journey of a group of Grade 8 teachers as they examine ways to improve the teaching and learning of elementary mathematics. The team focused on improving assessment strategies and the uses of effective student tasks. The surveys, interviews and observations suggest that the collaborative approach to professional learning can be effective.

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## Improving Teaching and Learning in Grade 8 Mathematics: A Case Study

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### Abstract

*This paper describes the journey of a group of Grade 8 teachers as they examine ways to improve the teaching and learning of elementary mathematics. As part of their participation in the Collaborative Teacher Inquiry Project, the team selected the Dimensions of Assessment and Evaluation, and Student Tasks as their professional development focus. The surveys, interviews and observations highlighted some of the successes and challenges experienced when attempting to improve teaching practices and student learning. The study also suggests that the collaborative approach to professional learning can sometimes be effective.*

**Keywords:** elementary school mathematics, mathematics education, teacher education

### Research Objectives

There are numerous benefits to collaboration within the teaching community. Through the interplay of collaboration, classroom enactment, and reflection, teacher's knowledge is increased (Krajcik, Blumenfeld, Marx & Soloway, 1994). Working collaboratively combines teachers' skills and resources, such that new methods and new approaches can be explored (Curtis & Curtis, 1990). The sharing of one's expertise and perspectives lend to a greater sense of trust and respect within the learning community. Gable and Manning (1997) noted that these interpersonal communications help establish effective professional relationships. The increase of interpersonal communications may also lead to positive changes in a school's atmosphere. Most importantly, collaboration amongst teachers may result in improved student achievements

(Goddard, Goddard, & Tschannen-Moran, 2007).

The Collaborative Teacher Inquiry Project (2012- present) aims to understand educational practices in Grade 8 mathematics, and utilizes the Ten Dimensions of Mathematics Education (McDougall, 2004) as a framework to improve elementary mathematics programs. A partnership with the University, department heads, curriculum leaders, administrators, and teachers from eight local schools in Central Canada worked collaboratively to discuss and improve teaching implementations in Grade 8 mathematics. This paper describes one Grade 8 mathematics implementation team's journey, as the team examines ways to improve the uses of student tasks and assessment strategies.

### **Method**

#### *School Context*

Founded in 1973, Silver Birch Middle School (pseudonyms were used for the school, the principal, and the teachers) is located in a metropolitan city in Central Canada. Currently, Silver Birch Middle School is home to approximately 310 Grades 6 to 8 students, with about 25 students in their Second Language program. The school also hosts the region's Gifted and Behavioural programs.

According to the school's website, the staff at Silver Birch Middle School strives to create an environment where students can build strong academic and social skills. Many extra-curricular events (e.g. sports team, music festivals, field trips) are organized and promoted to students. With regards to numeracy, 52% of their Grade 6 students achieved level 3 and level 4 (meets provincial standard and exceeds provincial standard, respectively) in a recent provincial large-scale assessment examination. The school aims to improve this achievement by 10%, raising their Grade 6 students' level 3 and level 4 achievement to 62%.

### *Data Collection*

The Grade 8 mathematics implementation team at Silver Birch Middle School consisted of one principal and four Grade 8 mathematics teachers. The Ten Dimensions of Mathematics Education (McDougall, 2004), a conceptual framework that identifies components in a successful mathematics program, was utilized in this project. During the first year of this project (2012-2013), four workshops were held at the University, where implementation teams from eight of the selected schools met and discussed teaching successes and challenges. At the first meeting (October 18, 2012), administrators and teachers identified two dimensions of focus for their schools' mathematics programs. To assist this process, participants completed a 20-item, Likert scale survey. Based on the elements identified in the Ten Dimensions framework, the scores on this survey reflect the participant's attitudes and practices in relation to current mathematics education trends (McDougall, 2004; McDougall et al., 2003). After the first session, three additional professional learning days took place at the University. Assessment, student tasks, and technology were the primary focus of these sessions respectively.

The University team interviewed administrators and teachers to further understand their teaching practices, goals, and challenges. The structured interview consisted of 30 questions that guide participants in their reflection on learning environments, visions of successes, challenging circumstances, and goals in mathematics. The participants had opportunities to indicate if they did not want to participate in the interviews, or any of the research components associated with this project. Each interview was approximately 45 minutes in length. They were audiotaped and transcribed.

### **Findings**

#### *Formation of the School Improvement Plan (SIP)*

During the individual interviews, the principal and teachers involved in this project each stated that their School Improvement Plan was a result of the collaborative contributions of the administrative staff, the persons of responsibility (POR), and all of the teachers. As one teacher stated: “We are all participating in the development of our school's improvement plan. It is a direct input from all the teachers from this school. That is why it is an integral part of our everyday work, and an absolutely organic component to our teaching” (T3, Silver Birch Middle School, Interview). Though established at the beginning of the school term, the plan was often seen as a changing, fluid document. This concept was reinforced in a teacher's recount: “We are always discussing, always communicating, we are also sharing ideas. For me, it is always fluid” (T4, Silver Birch Middle School, Interview).

As a guide for the creation of the School Improvement Plan, the four pillars of Student Success (Ministry of Education, 2008) were utilized. These pillars are: (1) Literacy, (2) Numeracy, (3) Pathways, and (4) Community, Culture and Caring (Ministry of Education, 2008). Combined with an examination of student data, the school improvement team created a preliminary plan for their superintendent. From then on, a continuous refining process took place, and better strategies and more detailed steps were discovered and discussed during staff meetings (Principal, Silver Birch Middle School, Interview). A teacher described the process:

We broke off into smaller groups based on subjects, grades and stuff. We kind of listed where we were and where we needed to go. And after we collaborated, we came back together and we discussed some more and we came back to our boss, the principal and vice principal and they looked at it. (T1, Silver Birch Middle School, Interview)

#### *Plans for Success*

When asked about their vision of success in Grade 8 mathematics, the principal described his as a learning process that is fun and deeply meaningful. Mathematics education, he believes,

should not emphasize the correct answers only. Rather, students need to experience math - its dynamic and applicable nature (Principal, Silver Birch Middle School, Interview). To attain this goal, one teacher suggested the use of manipulatives and rich tasks to engage students in their learning. “I want them to be excited when they know math is coming up” (T1, Silver Birch Middle School, Interview). Similarly, another teacher noted:

[One of] the goals for our students this year is to really focus on making a very clear display of their knowledge. Having to explain their responses and show their thinking in a variety of ways. Not just pencil and paper, but with manipulatives and other materials they are given. (T2, Silver Birch Middle School, Interview)

In order to assist students in clearly displaying their mathematical knowledge, “there needed to be considerations for multiple intelligences and non pencil and paper activities” (T2, Silver Birch Middle School, Interview). To achieve this, the staff realized that “new ways and new strategies for supporting [their] students” were necessary (T4, Silver Birch Middle School, Interview). Participation in the Collaborative Teacher Inquiry Project was one avenue in which new ideas for teaching and learning mathematics could be explored.

#### *Assessment and Evaluation*

Based on their Grade 8 mathematics program goals, the implementation team at Silver Birch Middle School identified two Dimensions of focus for the school year. One Dimension was Assessment and Evaluation. Knowing that assessment is highly emphasized by the Ontario Ministry of Education, and realizing the importance of assessment to student achievements, the teachers wanted to utilize different forms of assessment to aid student learning. For one teacher, she is determined to “get away from only quizzes and tests” (T1, Silver Birch Middle School, Interview). Her motivation for doing so is a realization that students learn and express their understanding differently.

Another teacher hoped that, through this project, more collaboration and discussion regarding assessment would arise within the school:

The assessment part, we all do different things, and we want to streamline it so that it is consistent. All of us, not just you do one thing and I do another. That we are all on the same page and we are making sure that we are assessing our students properly. (T4, Silver Birch Middle School, Interview)

To facilitate more discussions amongst Grade 8 teachers, their teaching schedules were carefully planned, to ensure more common prep time. During common prep time, teachers often worked in pairs to look through the available resources, plan out an upcoming unit, and discuss diagnostic options. A teacher described a recent team meeting:

As a group, we do long range plans. We go through chapters, we look through what resources we have. More recently, we sat down and really planned out a unit together. Discuss rich tasks. We talked about the diagnostics, and of course, the cumulative [assessment] tasks at the end. (T1, Silver Birch Middle School, Interview)

### *Student Tasks*

Another Dimension selected by the implementation team was Student Tasks. The principal recounted how, during the first professional development workshop at the University, the teachers were introduced to several rich student tasks. After investigating the tasks, they wanted to see more of these types of activities in their mathematics classes. One teacher was determined to “find rich tasks that simultaneously meet several of the outlined specific expectations outlined by the Ministry of Education” (T2, Silver Birch Middle School, Interview). For this teacher, successful integration meant searching beyond what was available in textbooks, and using technology such as SmartBoard and Geometer's Sketchpad.

The four professional development sessions at the University provided the team with numerous teaching ideas and resources. After trying out a rich student task that integrated

different subjects (mathematics and visual arts) and multiple mathematics expectations (geometry, patterns, and rotations), the teachers introduced it in their classrooms. Many students were engaged in this task, and the final projects were displayed in the hallways of the school as an encouragement for their accomplishments.

In addition, a wiki space (<http://grade8project.wikispaces.com>) was created to facilitate the sharing of ideas and resources amongst the implementation teams. Maintained by the University research team, the wiki space made resources more conveniently available.

#### *Guidance from the Administration*

Throughout the professional development process, the collaborative efforts amongst the administrative staff and the teachers have contributed greatly to the success they have experienced. Viewing his leadership role as one similar to a “lead teacher”, the principal aims to meet the mathematics goals of the province by setting the goals and the direction, and providing the needed support within his school (Principal, Silver Birch Middle School, Interview). To demonstrate his support, he joined his Grade 8 staff during common prep, and listened as they shared their teaching ideas, successes, and challenges. Together, they “explored new teaching methods and resources” (T4, Silver Birch Middle School, Interview). In addition, he would “occasionally sit in and observe parts of the teachers' mathematics lessons” (T4, Silver Birch Middle School, Interview). The observations and one-to-one discussions afterwards were ways to provide “individual teachers with more specific support and guidance” (Principal, Silver Birch Middle School, Interview).

One teacher described the administrative team at this school to be “quite positive”, with “no resilience to help” (T3, Silver Birch Middle School, Interview). Another teacher echoed similar sentiments:

If there is anything we don't understand or whatever, the door is always open to our administration to talk about it. They accept our own ideas as well. If we have our own idea, they will help us explore it. (T4, Silver Birch Middle School, Interview)

### *Collaborative Efforts Amongst Staff*

Similarly, a lot of continuous, collaborative efforts and supports were evident amongst the Grade 8 teachers at Silver Birch Middle School. Weekly meetings amongst the teachers were scheduled, and “common prep periods were planned” (T1, Silver Birch Middle School, Interview). During their weekly meetings, the teachers “talk about what [their] big goals are and what [they] are working on. The needs of [their] learners” (T2, Silver Birch Middle School, Interview). During their common prep periods, the Grade 8 team had opportunities to “lay out [their] plans” (T1, Silver Birch Middle School, Interview). When weekly meetings and common preps were difficult to arrange due to schedule conflicts, “Lunch and Learn”, informal discussions during lunch times, were occasionally held (T4, Silver Birch Middle School, Interview). These sessions gave “teachers opportunities to explore specific teaching topics of interest” (T4, Silver Birch Middle School, Interview).

A beginning teacher found the support provided by the administration and teaching staff to be especially beneficial:

I think the challenging thing for me is just the lack of experience, but everyone has been very supportive, especially those in my groups. With the planning and stuff. (T1, Silver Birch Middle School, Interview)

Another teacher summarized the support for one another within their school:

We are constantly sharing information. We never said no, especially with this team that we have. I think we are very good at that, where we are constantly supporting each other. (T4, Silver Birch Middle School, Interview)

## **Discussion**

### *Impact of the Project*

Through this project, the participants became more aware of their teaching practices. By identifying two Dimensions, the implementation team was able to focus their attention and resources. As a result, the team received specific and clear guidance. For the Assessment and Evaluation Dimension, the team identified their desire to explore different forms of assessment. Information and examples on different forms of assessment was investigated during one of the professional development sessions at the University, and the team discussed those concepts further during weekly meetings and common prep times. For the Student Tasks Dimension, the team noted the importance of incorporating and integrating different types of activities. Student tasks were explored during one of the professional development sessions at the University, and more resources were readily available on the project's wiki space.

In addition, the principal and teachers at Silver Birch Middle School expressed the importance of tackling mathematics education improvement collaboratively. The principal noted:

What I like about this project is the emphasis of a Grade 8 team, and it is not just individuals. In our case, four teachers together experiment and try things as a team. We can be successful, and you will see the results of that with time. (Principal, Silver Birch Middle School, Interview)

The sense of teamwork and collective success was also echoed in the teachers' reflections. Through the participation in the Collaborative Teacher Inquiry Project, a teacher is convinced that schools could be more effective and more successful in their mathematics programs if there is “intensive teacher support from JK all the way up to Grade 8” (T2, Silver Birch Middle School, Interview).

The Ten Dimensions of Mathematics Education (McDougall, 2004) was an effective framework for identifying appropriate areas for investigation and implementation of new teaching practices. The survey (Ross et al., 2003) provided the data to identify the dimensions as

well as providing teachers and administrators with mathematics vocabulary to talk about mathematics improvement. The wiki was also an important source of support as teachers could share and download activities and resources to further their own understanding of mathematics instruction.

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Title of the submission : Perceived difficulties of schooling for North Korean defectors in South Korea

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## Perceived difficulties of schooling for North Korean defectors in South Korea

### Abstract

The study presents qualitative accounts of tensioned sense of place of North Korean youth defectors who live in South Korea and explores in what ways those youth experience tensions in their sense of place. Employing positionality as analytic lens, we examine how two aspects of positionality – place identity and affordances of place—get played out in the youth tensioned sense of place.

In a recent couple of decades, South Korean society has been in a rapid transition from a monolithic, homogenous society (with one language and one ethnicity) toward a multicultural society. One group (of concern in this study) among this influx of people coming from other nations for work, study, or marriage is North Korean defectors (NKDs). Studies continuously report problems and concerns (such as under achievements, high dropout rates, and psychological problems) over NKDs' adjustment within South Korean education system. To look further into this concern from NKDs' perspective, this study explores NKDs' perceived difficulties as they try to participate in schooling in South Korea. Drawing upon NKDs' perceptions, this study tries to problematize how education is framed and practiced in South Korea.

Informed by pedagogy of place, this study is particularly tries to problematize and reframe “place” as shifting, dynamic, permeable, polyvocal, heterogeneous, and non-dichotomous for further educational dialogue in South Korea (Franzosa, 2007; Greenwood, 2010; Somerville, 2010). Employing focus group interviews with North Korean defector students, parents, and their teachers, the study explored how education in this new place, South Korea is framed and perceived. Participants (26 students, 8 parents, and 10 teachers) were invited from an elementary and a middle schools in Seoul, South Korea that are known to serve a relatively larger number of NKDs and provide extra support programs for them. Analysis went through open, axial, and selective coding processes to explore perceived difficulties in learning by students, parents, and teachers and to examine what the perceived difficulties reveal about how education is being framed and practiced in South Korea. Preliminary findings indicate a complicated, interconnected network of perceived difficulties for North Korean defectors as they try to participate in schooling in South Korea. A comparative examination describes systematic differences between two different places, the North and the South, showing how an education system is intertwined within multiplicity of a place including geopolitical, historical, cultural, social, and linguistic dimensions.

The study will present three contradictions identified from the interviews and further examine questions the contradictions pose to discuss what and how these contradictions tell us about “this new place” for NKDs.

- First, *trying to catch up, yet falling further behind*. While “catching up” with South Korean education as an urgent goal and put a concerted effort into it, yet, NKDs expressed concerns and “expect” further “falling behind” as the

students reach higher grade levels. Even after putting their concerted educational effort into, “catching up” is not working out.

- Second, *seeking individualized support, yet wishing to conceal NKD identity*. To better support schooling of NKDs, all participating groups pointed out individualized approach is most needed. However, there exists strong desire to hide or ignore their identity as a NKD. These students are caught in between asking for help to catch up academically and staying quiet to fit in socially.
- Third, *“catching up” with school takes more than a school*. South Korean students would go to cram schools after school, on weekends, and/or during school breaks. Thus schooling alone is not enough for NKDs to catch up with schooling in South Korea. To play catch up, NKDs are pressured into an extremely complicated, competitive educational environment.

NKDs’ experiences of denied historicity, differences treated as deficits, rhetoric of accountability in education provide grounds for educators to problematize and reconceptualize “place” for education, that is to “reintroduce reality as dynamic, heterogeneous, and non-dichotomous” (Gough, 2006, p. 628).

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## **Tensioned sense of place: Cases of North Korean youth defectors**

South Korean society has been in a rapid transition from a monolithic, homogenous society toward a multicultural society. This shift has been recent, in fact became visible within a couple of decades, with an influx of people from other nations for work, study, marriage, or seeking refugee status. This shift in the society has affected classrooms as well. To examine the recent multicultural education concern, this study draws on pedagogy of place. The study begins with the belief that the process of learning is informed by learner's sense of place: It is important to document and explain what students' sense of place is and thus how it might matter in educational contexts (Gruenewald, 2003). Thus the purpose of this study is to understand what sense of place North Korean youth defectors develop. In particular, we look into cases of tensioned sense of place where North Korean youth defectors talk about their place experiences. As Proshansky et al (1983) argued, "when a physical setting becomes dysfunctional that a person becomes aware of his or her expectations for that setting. What was routine and in the background suddenly becomes the "figure" in the thinking of those using the setting" (p.75). Thus the exploration of tensioned positionality would guide us to better understand (taken for granted) conditions and/or expectations that shape and support the youth' sense of place development. In this study we try to understand how North Korean youth defectors experience tensions in sense of place and to describe tensioned nature of their sense of place.

We view "place" as a complicated, ecological system that includes physical, biological, social, cultural, and political factors with history and psychological state of the person who share the location (Ardoin, 2006; Gruenewald, 2003; Lutts, 1985). As Gruenedwald (2003) articulated, "place, in other words, foregrounds a narrative of local and regional politics that is attuned to the particularities of where people actually live, and that is connected to global development trends that impact local places"(p. 3). Thus, to frame youth sense of place stories expansively and connectively, linking a "place to places beyond" (Massey, 1991, p.29), it is critical to seek out and address historicity (decolonization) and positionality (reinhabitation) in their stories (Gruenedwald). This study attempts to understand youth sense of place by employing positionality as an analytic lens: an interplay between place identity and place affordances. It examines how two aspects of positionality get played out in tensioned sense of place.

The study, informed by phenomenology and ethnography (Katz, 2003), explores North Korean youth defectors' ecological relationship with their place. The study was carried out with 5 informants who attend the Crossroad School, an alternative high school, established particularly for North Korean defectors in South Korea. It focuses on stories of the informants who were selected purposefully, based on their residential history and educational backgrounds. While many of them are new to South Korean society (less than a year), yet many of them have lived in the country for several years. Some of students came to Crossroad, after unsuccessful

experiences with “mainstream” schools. Ethnographic methods of data generation were used including interviews (individual & focus group), participant observation (in science classes where the researchers have taught for a year), and going along (Kusenbach, 2003).

Positionality is explored through the interaction between “who I am in a place” and “how I live where I am”. Thus place experience is viewed as a cyclic and continuous process between the two aspects. When there is a discrepancy between who the youth is (including what the youth wants in and from a place) and the affordances of the place (including what the youth think they can do and what they actually get to do in that place), a tension emerges in sense of place. As a result, youth positionality becomes tensioned. Based on our preliminary analysis, we have learned that there are four conditions that affect youth’ sense of place development, thus when limited, they become sources of tension: 1) leveraging place history (continuity of activities and cultural repertoire), 2) environmental knowing (familiarity with the setting and understanding), 3) environmental competence (knowing how to navigate and knowing how to engage), and 4) developmental trajectory. Stories showed that when these components are lost or ill-provided, tensions emerged in children’s sense of place and their positionality became diminished. Further by examining internal conditions in the youth’ sense of place and their diminished positionalities, we will further look into how the youth managed to cope with the inconsistencies and tensions that emerged in their sense of place development in a new place.

By exploring youth sense of place when it sits in tension, we will be able to develop an understanding of what aspects of sense of place matters and how they matter in the youth’ place relationship. The stories of tensions will allow us to look into aspects that might have been taken for granted (which still act significantly in shaping sense of place). Also, they led us to understand how these factors could support the youth sense of place development in a new place, South Korea. The study also will be able to present a conceptual framework which will guide us to examine how (displaced) youth interact and nurture their relationship with a place. It will provide an analysis on how the content and context of a new place (i.e., South Korea) might frame North Korean youth defectors’ sense of place. Using two constructs of identity and affordances, dialectical youth-place interactions can reveal the place-specific (or context-specific) particularities of youth place interaction.

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### Enhancing Health through Cultural Based Nutrition Education

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Delivering the Integral Education of child nutrition involving children and parents and culture based education has not been done in Indonesia. As a breakthrough local wisdom and universal values were integrated in nutrition education for children aged 3-6 years and their parents. The nutrition education modules given in four sessions consist of four themes. At each meeting three themes were delivered to the children and parents namely nutrition information, values and self empowerment exercise. A total of 12 local wisdom and universal values integrated in four meetings of nutrition education. Those 12 values are Self Control, Joy, Healthy Living,

Discipline, Concern for All Life, Discretion , Understanding, Cooperation, Sacrifice, Caring, Service to Others and Independent. This learning system has been implemented every Sunday since October 23, 2011 in Yogyakarta.

This paper observed integration of the values into nutrition education system using M-O-A, social marketing theory. The social marketing theory toward sustainability change requires three conditions: Motivation, Opportunity and Ability.

In this integral nutrition education, Motivation developed together by growing inner Will Power and wisdom of the children and parents. It introduces local cultural values to construct will power. In addition, it's also based on expression of universal value peace, love and harmony to develop Wisdom.

Meanwhile, Opportunity is given through involvement of parents as children's nearest stakeholder in the program. The parents are given the same education material as the children. Through this system, children are more likely get opportunity, support and help from parents to change their behavior toward healthy live. The education material for parents delivers in form of explanation, demonstration and exercise. The same education material delivers to the children through songs, movement, story telling, game and coloring.

On the other hand Ability developed through nutrition knowledge and holistic health, which deliver integrated with local culture and universal values to help the internalization of the information. In addition, the program also provided stress management skill through self empowerment exercise. The exercise help preparing body, mind and soul die-jest information clearly. This skill increase the Will Power to change behaviors and became self independent and self empower facing global challenge of daily live.

The impact of the program is demonstrated in the results of a longitudinal study on the group who received education and who were not getting education program showed not only an impact on parental knowledge on nutrition and improve the state of health but also strengthens the characters of the child. In addition to increasing knowledge about nutrition and health of the children, the program also change the child's behavior and habits. About 77% of parents reported changes in knowledge, attitudes or habits of the child after the nutrition education program into a better direction. These positive changes are not only related to diet and health, but also in aspects of child's personality such as more sociable, could more concentrate , children become more independent, more creative, and more confident.

Keyword: Nutrition, Education, Health, Culture, Longitudinal

## Cross-Cultural Investigation of Barriers to and Support for Student Success

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**Abstract:** *This study uses Q-methodology to investigate graduate students' theoretical perspectives concerning educational practice, based on their educational experiences in different countries - Canada and Hungary. Q methodology, as a small-sample, intensive methodology, assists in obtaining understandings concerning the subjectivity of participants that are not possible through more traditional means. It may also, as demonstrated in this paper, be very useful in conducting cross-cultural studies. Four factors emerged as a result of our study representing diverse views on education by graduate students from the two countries. All students from Hungary merged into one factor with few Canadian students sharing similar views. The findings are considered in the light of deepening our understanding of diversity of cross-cultural views on education.*

We believe that Q-methodology could be especially useful in the situation of cross-cultural comparison of students' attitudes. Our study is designed to lead to new insights into the possibility of using a Q methodology-based assessment tool to capture student attitudes in cross-cultural investigation of transitional challenges students face when they move to post-secondary studies. This study is the first in a set of investigations. We concentrated here in attempting to understand a broader context of cross-cultural differences in attitudes towards educational ideas and theories, before we will move into more concrete analysis of the barriers to academic success of university students in our follow up study.

We choose Q methodology to study students' success and barrier in the post-secondary institution internationally because we believe that it is a way to study the "subjective" part of behavior and learning activities of students. Q sorting discloses the implicit structures of their discourses, and these may then be interpreted with the aid of quantitative techniques (correlation and factor analysis). Q methodology makes it possible to correlate persons instead of tests or responses (Stephenson, 1953), thereby allowing the participants' perceptions to form the basis of the resultant factors. Rather than trying to define "independent variables" and to test them on a student population in a classroom, we can "analyze them instead from the point of view of the persons who did the rating, because theirs are the actual operations at issue" (Stephenson, 1953, p. 40).

The power of Q methodology lies in its ability to gain insight into the self-understandings of the participants in the study. This is particularly useful when dealing with views/attitudes which are held in a manner that conflates the normative, expressive and discursive functions. This methodology can assist in obtaining understandings concerning the interpretative subjectivity of participants that is not possible through traditional positivistic research methodology (Brown, 1993; Brown, 1980).

Our study, like many recent Q studies is designed to lead to new insights into the possibility of using a Q methodology for cross-cultural comparison of attitudes.

### **Research Questions:**

-What are the strengths and weaknesses of the Q methodology in exploring cross-cultural differences in attitudes towards education

-What can we learn from the Q methodology findings in terms of deepening our understandings of cross-cultural ideas about education?

One of the major requirements for creating a good Q methodology -based classroom assessment tool lies in identifying a concourse. The concourse is the communication about the topic of interest, in this case educational philosophy. From this concourse, a sample of statements is drafted that represents the diversity of the community. The analysis of the sorts yields information about student beliefs, attitudes, etc. For our study, the relevant concourse is the array of ideas, attitudes, feelings, values and perceptions that different individuals may associate with the core idea of education's purpose. We choose the statements that accompanied diverse theories and practices in current North American education. (please, see Attachment #1).

### **Implementing the Q Study**

First, we identified the topic we wished to explore as the theoretical perspectives of educational stakeholders in education. Second, in order to obtain a series of statements that represented the discourse on the topic, we borrowed heavily from Egan's analysis of the main competing ideas in contemporary educational thought. Our main concern during the statement generation phase was to insure that the resultant set of statements represented the issues that educational stakeholders might hold. Third, the participants in the Q study were asked to rank 42 statements on a scale ranging from +3 ("agree with most strongly") to -3 ("disagree with most strongly").

We administered Q sorts to a total of 22 graduate students, participants in the Masters Class in the Summer semester of 2013 at the Faculty of Education in Canada and participants in the Master Class in the Fall semester of 2013 in Hungary. The "person" sample therefore included respondents from different levels of educational system in British Columbia (graduate students) and graduate students in the Master of Counseling Program in Hungary.

Fourth, the Q sorts were the subjected to factor analysis of the rankings that allowed for the extraction of a few "typical" Q sorts (factors) that captured the common essence of several individual Q sorts. These "typical" Q sorts were then interpreted by investigators to give a verbal explanation to the discourses uncovered by the statistical procedure.

### **Interpretation**

We used PQ Method software with varimax rotation to analyze the Q sorts. A four-factor solution shows the best correspondence of participants' views. The factor-loading matrix is shown

in Table A. The factor loadings for each Q sort indicate its correlation with the factor. For example, Q-sort 22 has a significant loading of 0.84 into the Factor 2, with all scores above 0.43 significant at  $p < 0.01$ .

Using the z scores and the weighted average placement for each statement by each factor, we determined the educators' perspectives of the four factors. In doing so, we focused on the statements placed in the +3/+2 and -3 /-2 categories in the different factors. We also focused on distinguishing statements for each factor, that is, those that are statistically different from the placements of the other factors. The Appendix shows the weighted average placement (rank) of each statement by each factor. These average weighted placements are constructed through z scores that calculate the average placement of each statement by the educators who loaded significantly on the factor.

Our analysis of the factors that emerged and their weighted averages yielded the following description of the four perspectives of educators in our study.

### **Factor 1. Education Should Focus on the Interiorization of Cultural Tools.**

This factor is based on the educational theories of Lev Vygotsky. Education is primarily an organized activity assisting the young to make sense of the world by use of mediating intellectual tools that in turn profoundly influence the kind of sense that we make. Our educational development, then, cannot adequately be understood in terms of becoming appropriately socialized, or merely through the knowledge we accumulate, or in terms of psychological stages but requires an understanding of the role played by cognitive/cultural tools available in the socio-cultural realm in which the child lives.

The students who comprise Factor 1 favor the idea of conceptual development in education and they value the wide range of cultural tools that, in their view, should be a part of schooling. This is the only group who sorted positively (+3) Statement 13, *Teaching concepts is important for the content of the concept and also to develop the ability to think in concepts*. In discussing the role of the teacher this group of educators agreed strongly (+3) with Statement 11, *I believe a central role for the teacher is to mediate understanding for the student, moving them from an early grasp of a subject to full comprehension through whatever means proves effective*. And they disagree with the idea that teaching should be merely facilitating, thus they sorted negatively (-2) Statement 27, *Students are their own best teachers*.

They also consider the introduction of psychological/cultural tools by a teacher to be the major source of development of a child's mind and therefore they disagreed (-1) with the Statement 10, *True understanding of anything can only come from direct experience*.

### **Factor 2. Hungarian students' attitudes.**

This factor seems to be based on ideas of Hungarian students who mainly comprised the Factor 2. This is the only factor who strongly agreed (+3) with the Statement 33 *We can't expect kids to be good at everything, but every child is good at something*.

This group is the only one that strongly agreed (+3) with the Statement 23, *We must be critical of traditional curriculum and its role in maintaining traditional power dynamics. Real world change and freedom from oppression is possible by teaching students the skill of critical thinking*

And, unlike Factor 4, they strongly disagreed with the statement 38 *An ignorant teacher could still be a successful teacher.*

### **Factor 3. Socialization (Dewey): Education Should Focus on Socializing the Child**

This Factor emerges from the idea that education's primary role is the socializing of the child. This view of education is based on the idea that the central mandate of schools is the socialization of the young into a set of dominant attitudes. School is seen primarily as a social agency and the curriculum is mostly made up of such constructs as life skills and work preparation courses. This idea is related to the now popular notion that schools are the places where the young are prepared for life in the economy. They agree strongly with the Statement 4 that *Schools should aim to produce good citizens not just future experts in particular fields.*

This group of educators, unlike any the other groups, strongly believes that teachers are important socializers in our society. They are the only group that sorted strongly positively (+3) the Statement 5, *The best way affect change of any social issue is through education*

### **Factor 4. The ignorant teacher could be a good teacher.**

This idea is based on the notion that education should follow the natural and spontaneous development of the child's whole self and has its roots in the work of Jean-Jacques Rousseau. Thus, this is the only group who strongly agreed (+3) with the Statement 21, *I believe the best teachers relinquish their power.*

Similarly, this is the only factor who strongly believe (+2) that *An ignorant teacher could still be a successful teacher* (Statement 38). The key to learning is that it follows an underlying natural development. Thus this group is the only one that agreed with the Statement 29, *Schools destroy children and their natural wonder with the world.*

## **Discussion**

From the analysis of the Q sorts, four factors emerged in our study. Our analysis of the factors easily mapped onto ideas central to current educational discourse. The factors thus provide some evidence that this discourse is diverse and differ from country to country.

Our study is designed to lead to new insights into the cross-cultural comparison of transitional challenges most students experience when they move to post-secondary studies in Canada and Hungary. Cross-cultural investigation leads to better understanding what factors may serve as both barriers to, and supports for, students' academic success. This understanding should help receiving institutions better support students through programs, policies and services that are known to enhance student academic success

Table A. Perspectives of Graduate Students from Canada and Hungary on the Main Theoretical Ideas in Education

QSORT/Sorter		Factor 1	Factor2	Factor3	Factor 4
QS	ORT	1	2	3	4
1	CAN	0.1425	0.6177X	0.2327	0.2125
2	CAN	-0.0437	0.1115	0.4187X	0.0106
3	CAN	0.4264	0.6635X	0.0655	-0.0425
4	CAN	0.153	0.2653	0.4861	-0.3499
5	CAN	0.3468	0.3186	0.2213	0.3927
6	CAN	-0.0567	0.083	0.3516	0.4204X
7	CAN	0.2505	0.6013X	0.2221	0.2292
8	CAN	0.4462	0.5020X	0.0066	0.1332
9	CAN	0.6001X	0.5854	0.2113	0.1175
10	CAN	0.3014	0.3663	0.4288X	-0.2891
11	CAN	0.7062X	0.3716	0.0835	-0.0692
12	CAN	0.3247	0.5343X	0.2951	0.02
13	CAN	0.4723X	0.5316	0.2573	-0.0451
14	CAN	0.8020X	0.2641	0.1784	-0.104
15	CAN	0.6740X	0.2611	0.3095	0.0235
16	CAN	0.7266X	0.4282	0.041	-0.1612
17	CAN	0.3343	0.6264X	0.1002	-0.0135
18	CAN	0.7813X	0.3883	0.1271	0.0459
19	CAN	0.3834	0.6044X	0.3937	0.1806
20	CAN	0.4806	0.5524X	0.2186	-0.0428
21	HUN	0.1996	0.5543X	0.4773X	-0.0523
22	HUN	0.0157	0.8480X	0.1044	-0.05
23	HUN	-0.0554	0.6880X	0.0667	-0.063
24	HUN	0.1358	0.5891X	0.4751X	0.2867
25	HUN	0.234	0.7582X	0.3674	-0.1216
26	HUN	0.2394	0.6007X	0.0527	0.111
27	HUN	0.2659	0.5669X	0.143	0.0856

Note: CAN -- Canadian students sorts; HUN - Hungarian students sorts

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### Appendix 1 Factor Q-Sort Values for Each Statement

No.	Statement	Factor 1	Factor 2	Factor 3	Factor 4
1	I believe that teachers should be role models	1	1	1	-1
2	The main goal of education is to equip students with the knowledge and skills best suited to ensuring their success as citizens.	0	1	0	-2
3	A large part of curriculum should be subjects that have real world relevance: the environment, technology, sex education, household duties and so on.	0	2	1	-1
4	Schools should aim to produce good citizens not just future experts in particular fields.	0	0	3	0
5	The best way affect change of any social issue is through education	2	1	3	-1
6	I believe that the role of the teacher should	-2	2	1	1

	be to facilitate the child's own active discovery. Teaching is not 'teaching' at all. It is an act of guiding and appreciating.				
7	An ideal education emphasizes individual differences among learners and takes into account their natural learning abilities. We have to recognize the importance of students' varying learning styles.	1	2	0	0
8	Having universal curriculum is ridiculous. Each child should be free to form their own curriculum based on individual interests and aptitudes	-1	-2	-1	0
9	Each child's individual potential should guide the teacher's activities	0	0	-1	-1
10	True understanding of anything can only come from direct experience	-1	-1	2	2
11	A central for the teach is to mediate understanding for the student, moving them from an early grasp of a subject to full comprehension through whatever means proves effective.	3	2	1	1
12	The development of any student is reliant what they are taught.	2	-1	-1	-2
13	Teaching concepts is important for the content of the concept and also to develop the ability to think in concepts	3	2	0	-1
14	Every culture has its own array of tools and traditions for understanding any subject. Schools should make use of these tools and traditions.	2	1	2	3
15	Language plays a significant role in development of a child in the development of a child. It's not only a tool for communication.	3	3	3	0
16	I believe the best teachers care for their students first and foremost. Everything else comes later.	1	0	0	0
17	We cannot hope to teach a student until we form a relationship with that student. We must know what is happening outside of the classroom in the student's life if we are going to be successful inside of it	1	-1	0	1
18	Devising curriculum for any individual student is easy when we take the time to form a relationship with that student first	0	0	1	2

19	A central concept of any pedagogy should be happiness	-1	-1	0	1
20	We must care about the whole child, not just the mind. It is more important to feel loved	0	0	2	0
21	I believe the best teachers relinquish their power and give power to minority voices in the classroom	-1	0	0	3
22	The plurality of students voices all be given a place in the classroom	1	1	-1	2
23	We must be critical of traditional curriculum and its role in maintaining traditional power dynamics. Real world change and freedom from oppression is possible by teaching students the skill of critical thinking	1	3	1	-1
24	Education is often used to oppress but it also has the potential to free the oppressed	2	0	0	0
25	Who creates curriculum has a direct bearing on who succeeds in educational system and who fails	1	0	0	3
26	Teachers are completely unnecessary and often impede student	-3	-3	-3	-1
27	Students are their own best teachers	-2	-1	-1	2
28	When a student is motivated to learn from real world situations, that is real education	0	1	1	0
29	Schools destroy children and their natural wonder with the world	-2	-2	-2	1
30	There is no need for children to attend school. They are capable of learning everything the need outside of formal education	-3	-3	-2	-2
31	A priority for our educational system should be excellence in those most able to attain it.	-1	-2	-2	-3
32	Curriculum should be constructed primarily on the grounds of on the grounds of intellectual and cultural, rather than more generally social, values	1	-1	-1	-3
33	We can't expect kids to be good at everything, but every child is good at something	0	3	1	0
34	Children's own developing needs should be central to the curriculum	-1	1	0	0
35	Contrary to the popular belief that education always must be always be pleasurable, I believe that the difficulties a child encounters in the classroom provide the real	2	1	2	1

	opportunities for learning				
36	Teaching does not cause or determine learning. Learning is always unpredictable and self-determined	-2	-1	-1	1
37	Programs that promote brain health, such as nutrition programs, are a vital part to successful education	0	0	2	-2
38	An ignorant teacher could still be a successful teacher True knowledge is constructed in the exchange between student and teacher.	-3	-2	-3	2
39	Literature and history, the sciences and mathematics should receive most curriculum time. Subjects like Latin, Greek, and art history have to be present in the curriculum if we are to produce educated people	0	-1	-2	-1
40	I believe that assessment of knowledge can take many forms. A dance or drawing could be adequate substitutes for a written paper	-1	0	-1	0
41	I would feel comfortable with a student submitting a high school level paper in 'texting'	-2	-2	-2	-2
42	I strongly disagree with the brining play activities into the activities into the classroom. The benefits of play are exhausted once formal schooling begins	-1	-3	-3	-3

# DEVELOPMENT OF A Q METHODOLOGY-BASED COURSE ASSESSMENT TOOL TO CAPTURE SHIFTS IN STUDENT THEORETICAL FRAMEWORKS DUE TO PARTICIPATION IN A VYGOTSKY MASTERS CLASS

By Natalia Gajdamaschko and Jason Lapenskie, Faculty of Education, Simon Fraser University, Canada.

**Abstract:** *This study uses Q-methodology to investigate graduate students and practicing teachers' theoretical perspectives concerning educational practice, based on their participation in a Vygotsky Master Class. Q methodology, as a small-sample, intensive methodology, assists in obtaining understandings concerning the subjectivity of participants that are not possible through more traditional means. It may also, as demonstrated in this paper, provide evidence in support of theoretical work. Four factors emerged at the beginning of the Vygotsky seminar representing diverse views on education by graduate students. After the seminar, all students in the cohort merged into one factor. The findings are considered in the light of Lev Vygotsky's work, which provides an alternative way to theorize the relationship between learning and development. Vygotsky maintains that the highest level of conceptual development and understanding is always connected to what is happening in a social practice, such as teaching, that requires the participants to have self-descriptions that are constitutive of their involvement. Our findings challenge teachers to reflect more deeply on their practices.*

A Masters Course in Vygotsky theory has been taught at the Faculty of Education of Simon Fraser University for the last decade by one of the authors of this study. This seminar level course is situated within a two year masters program offered by SFU. The course is designed to mirror current discourse on Vygotsky theory in North America with the need for a careful examination of the intercultural appropriation of Vygotsky and clear recognition of the pitfalls of such appropriation.

The benefit of providing embedded Q methodology- based assessment into the Vygotsky Masters course would be to integrate the learning experiences of students with course assessment. Such an integration becomes more complicated when the course is mainly theoretical in nature and aims at unsettling the previous theoretical frameworks of students. The main criterion to be assessed then becomes not a conceptual understanding in itself, but a dynamic of conceptual change.

Q methodology, as a small sample, intensive methodology typically assists in obtaining an understanding of the subjectivities of the participants that is not possible through more traditional means (e.g., traditional R-surveys or tests and assignments that contribute to the grading process). It may also provide support in understanding theoretical frameworks, thus assisting in observing the occurrence of changes in theoretical positions of participants.

The power of Q methodology lies in its ability to gain insight into the self-understandings of the participants in the study. This is particularly useful when dealing with theoretical views which are held in a manner that conflates the normative, expressive and discursive functions. This methodology can assist in obtaining understandings concerning the interpretative subjectivity of participants that is not possible through traditional positivistic research methodology (Brown, 1993; Brown, 1980). Traditional positivist research methodologies remain prominent in educational research.

Our study, like many recent Q studies (see a sample in the annotated literature review in the attachment), is designed to lead to new insights into the possibility of using a Q methodology based course assessment tool to capture shifts in students attitudes due to participation in a particular course.

**Research Questions:**

- What are the strengths and weaknesses of the Q methodology in documenting a conceptual shift in students taking my Vygotsky Masters class?
- What can I as an instructor learn from the Q methodology findings in terms of changes in my teaching?

We chose Q methodology because we believe that it is a way to study the “subjective” part of behavior and learning activities of students in my class. Q methodology makes possible the analysis of educational discourses that students engage in prior to entering my Masters course and after the course of study. Q sorting discloses the implicit structures of their discourses, and these may then be interpreted with the aid of quantitative techniques (correlation and factor analysis). Q methodology makes it possible to correlate persons instead of tests or responses (Stephenson, 1953), thereby allowing the participants’ perceptions to form the basis of the resultant factors. Rather than trying to define “independent variables” and to test them on a student population in a classroom, we can “analyze them instead from the point of view of the person who did the rating, because theirs are the actual operations at issue” (Stephenson, 1953, p. 40).

One of the major requirements for creating a good Q methodology -based classroom assessment tool lies in identifying a concourse. The concourse is the communication about the topic of interest, in this case educational philosophy. From this concourse, a sample of statements is drafted that represents the diversity of the community. The analysis of the sorts yields information about student beliefs, attitudes, etc. The pre- and post-course sorts illustrates that some of the graduate students ideas, attitudes, etc. have changed after completing the course. For our study, the relevant concourse is the array of ideas, attitudes, feelings, values and perceptions that different individuals may associate with the core idea of education’s purpose. We choose the statements that accompanied diverse theories and practices in current North American education. (please, see Attachment #1).

**Implementing the Q Study**

First, we identified the topic we wished to explore as the theoretical perspectives of educational stakeholders in education. We were particularly interested in that area of contemporary educational discourse that concerns competing theoretical ideas about education and the appearance of new ideas from Vygotskian theory, for example the idea of "mediation" or “psychological tools.” Second, in order to obtain a series of statements that represented the discourse on the topic, we borrowed heavily from Egan’s analysis of the main competing ideas in contemporary educational thought and from our analysis of a set of 2-year Masters degree courses currently taught at the Faculty of Education. Our main concern during the statement generation phase was to insure that the resultant set of statements represented the issues that educational stakeholders might hold. Third, the participants in the Q study were asked to rank 42

statements on a scale ranging from +3 (“agree with most strongly”) to -3 (“disagree with most strongly”).

We administered Q sorts to a total of 10 graduate students, participants in the Vygotsky Masters Class in the Summer semester of 2013 at the Faculty of Education. Because this research project sought to not only uncover existing replicas or models of individual perspectives on education, but also to see if those perspectives change due to participation in the Vygotsky seminar, we administered Q-sorting twice - before and after the seminar. The "person" sample therefore included respondents from different levels of educational system in British Columbia (graduate students). Among them were three working at the college level, three currently teaching in the ESL system and four teaching in the public school K-12 system.

Fourth, the Q sorts were subjected to factor analysis of the rankings that allowed for the extraction of a few “typical” Q sorts (factors) that captured the common essence of several individual Q sorts. These “typical” Q sorts were then interpreted by investigators to give a verbal explanation to the discourses uncovered by the statistical procedure.

### **Interpretation**

We used PQ Method software with varimax rotation to analyze the Q sorts. A four-factor solution shows the best correspondence of participants’ views. The factor-loading matrix is shown in Table A. The factor loadings for each Q sort indicate its correlation with the factor. For example, Q-sort 10 has a significant loading of 0.83 into the Factor 1, with all scores above 0.43 significant at  $p < 0.01$ .

Using the z scores and the weighted average placement for each statement by each factor, we determined educators’ perspectives of the four factors. In doing so, we focused on the statements placed in the +3/+2 and -3 /-2 categories in the different factors. We also focused on distinguishing statements for each factor, that is, those that are statistically different from the placements of the other factors. The Appendix shows the weighted average placement (rank) of each statement by each factor. These average weighted placements are constructed through z scores that calculate the average placement of each statement by the educators who loaded significantly on the factor.

Our analysis of the factors that emerged and their weighted averages yielded the following description of the four perspectives of educators in our study (see Table 1 on page 5).

#### **Factor 1. Education Should Focus on the Interiorization of Cultural Tools.**

This factor is based on the educational theories of Lev Vygotsky. Education is primarily an organized activity assisting the young to make sense of the world by use of mediating intellectual tools that in turn profoundly influence the kind of sense that we make. Our educational development, then, cannot adequately be understood in terms of becoming appropriately socialized, or merely through the knowledge we accumulate, or in terms of psychological stages but requires an understanding of the role played by cognitive/cultural tools available in the socio-cultural realm in which the child lives.

The students who comprise Factor 1 favor the idea of conceptual development in education and they value the wide range of cultural tools that, in their view, should be a part of

schooling. This is the only group who sorted positively (+3) Statement 13, *Teaching concepts is important for the content of the concept and also to develop the ability to think in concepts.*

In discussing the role of the teacher this group of educators agreed strongly (+3) with Statement 11, *I believe a central role for the teacher is to mediate understanding for the student, moving them from an early grasp of a subject to full comprehension through whatever means proves effective.* And they disagree with the idea that teaching should be merely facilitating, thus they sorted negatively (-2) Statement 27, *Students are their own best teachers.*

They also consider the introduction of psychological/cultural tools by a teacher to be the major source of development of a child's mind and therefore they disagreed (-1) with the Statement 10, *True understanding of anything can only come from direct experience.*

### **Factor 2. Unschooling.**

This factor seems to be based on ideas of unschooling. Unschooling is an educational method and philosophy that rejects compulsory school as a primary means for learning . Unlike Factor 1, Factor 2 mostly doesn't see the role of schooling as important in mediating child development. This group is the only one that agreed with the Statement 30, *There is no need for children to attend school.* And they strongly disagreed with the statement that represents the Vygotskian idea of "teaching leads development" (Statement 25, *Who creates curriculum has a direct bearing on who succeeds in education systems and who fails).*

### **Factor 3. The ignorant teacher could be a good teacher.**

This idea is based on the notion that education should follow the natural and spontaneous development of the child's whole self and has its roots in the work of Jean-Jacques Rousseau. Thus, this is the only group who strongly agreed (+3) with the Statement 21, *I believe the best teachers relinquish their power.*

Similarly, this is the only factor who strongly believe (+2) that *An ignorant teacher could still be a successful teacher* (Statement 38). The key to learning is that it follows an underlying natural development. Thus this group strongly agreed with the Statement 29, *Schools destroy children and their natural wonder with the world.*

### **Factor 4. Socialization (Dewey): Education Should Focus on Socializing the Child**

This Factor emerges from the idea that education's primary role is the socializing of the child. This view of education is based on the idea that the central mandate of schools is the socialization of the young into a set of dominant attitudes. School is seen primarily as a social agency and the curriculum is mostly made up of such constructs as life skills and work preparation courses. This idea is related to the now popular notion that schools are the places where the young are prepared for life in the economy. They agree strongly with the Statement 22 that *When a student is motivated to learn from real world situations, that is real education.* And they maintain that *The main goal of education is to equip students with the knowledge and skills best suited to ensuring their success as citizens* (Statement 2).

This group of educators, unlike any the other groups, strongly believes that teachers are important socializers in our society. They are the only group that sorted strongly positively (+3) the Statement 1, *I believe that teachers should be role models.*

*Table A. Perspectives of Graduate Students on the Main Theoretical Ideas in Education pre -and post- Vygotsky seminar.*

QSORT/Sorter	Factor 1	Factor2	Factor3	Factor 4
<b>Pre-Seminar Sorting</b>				
1 Ed.psych1	0.5296X	0.0927	0.2024	-0.3067
2 High school1	0.1760	0.4328X	0.1215	0.1769
3 College1	0.7508X	-0.2431	0.0468	-0.0513
4 ESL1	0.4423	-0.0241	0.0030	0.5395X
5 High school2	0.5571X	0.1685	0.2089	-0.1520
6 ESL2	0.1534	0.2880	0.3604X	-0.0078
7 Elementary1	0.6741X	-0.0070	0.4882X	-0.0774
8 College2	0.6416X	-0.1983	0.0760	-0.2328
9 College3	0.8755X	-0.1132	-0.0429	-0.0507
10 High school3	0.8335X	-0.0383	0.1827	0.0561
<b>After Seminar Sorting</b>				
11 ESL1	0.6194X	-0.0608	0.0160	0.5578X
12 College1	0.7313X	-0.1350	-0.2861	-0.0961
13 Ed.psych1	0.6439X	0.1271	0.1088	-0.0815
14 Elementary1	0.6960X	0.0027	-0.1870	-0.1889
15 College3	0.7347X	-0.0236	-0.3441	-0.0043
16 ESL2	0.7342X	0.2148	-0.2303	0.0240
17 College2	0.7568X	-0.3789	-0.2877	-0.0526
18 Highschool1	0.6934X	-0.0002	0.1239	0.0270
19 Highschool2	0.8069X	0.0119	-0.1988	-0.1373
20 Highschool3	0.8066X	-0.2540	0.0475	0.2388

**Discussion on study results and possibility of using Q-methodology based assessment tool in graduate seminars in educational field.**

From the analysis of the Q sorts, four factors emerged in our Masters class prior to the start of the semester. Our analysis of the factors easily mapped onto ideas central to current educational discourse. The factors thus provide some evidence that this discourse is diverse – and even include the idea of “unschooling.”

Our study shows that today’s educational practice represents an amalgam of often divergent views concerning learning, teaching, the curriculum and the child. The finding of these four perspectives in this relatively small group of educators should not be considered as necessarily generalizable to the entire population of educators in our society. Yet, we do show

some evidence that graduate students in education hold diverse and at time incompatible ideas about educational theories prior to engaging in their study of Vygotskian theory.

We also found that after the Masters class all students shifted into Factor 1. However, some of our students had already conceptualized according to the Factor 1 from the beginning. The results that were obtained are not surprising but confirm that Vygotsky theories are providing substantial influence in the educational discourse in North America.

Our study indicates some promising possibilities for using Q-methodology as an evaluation tool in graduate seminars in the field of education. Pre-and post-seminar Q-sort comparisons reveal that some but not all the graduate students shifted their perspective on educational issues as a result of participation in the Vygotsky Masters class. Realignment of students' attitudes with Factor 1 that represents mostly Vygotsky's theory and notions of education could therefore be interpreted as a positive evaluation of their work in the course.

However, a few questions remain unanswered by the study. One of them is to what extent are the graduate students' results influenced by the topics of the seminar prior to engaging in graduate work?

In addition, our study revealed that quite a few statements from our concourse held no discriminatory value --e.g. they were interpreted by a majority of study participants as neutral and not related to their own attitudes towards education. And, although we invested serious efforts in analyzing the concourse and attempted to create a balanced Q-sort statement matrix, more work needs to be done in the next study to refine the concourse matrix and to make sure that it represents the educational discourse and Vygotsky theory ideas more fully.

But even with these limitations, we believe that the power of Q methodology-based assessment and evaluation is its ability to provide a strong starting point for discussions in the Masters classroom based on newly gained insights of participants' self-understandings. As a result, classroom dialogs become more structured and productive and students gain deeper understanding of competing educational theories.

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**Sample of the annotated literature on Q methodology-based assessment of classroom practices:**

Wilson, D. D. (2007). Revealing shifts in attitude among undergraduates participating in academic service learning programs. *Operant Subjectivity*,30(1/2), 23--51.

“The primary goal of the current investigation was to examine how (or whether) participation in the course and the practicum might be associated with changes in the students’ attitudes towards teaching and learning” (p. 28). They compared pre-and post-term factor structures for evidence of attitude change. The results show that while marked shifts in attitude did occur during the class, the mindsets that the undergraduates brought with them into the program influenced the nature of those changes.

Popovich, M., Masse, N. Pitts, B. (2003). Revisiting student writer apprehension: A new interpretation of the Riffe and Stacks's writing apprehension measure. *Operant Subjectivity*, 26(3). The goal of this study of entry level media writing students at a Midwestern university was to determine whether their attitudes toward writing changed during the interval from beginning to end of their first (100 level) college journalism class. A well-conceived and tested empirical tool for measuring writing apprehension was adapted for use as a Q sort. An individual assessment of writing apprehension was obtained by using Q methodology to provide a personalized (subjective) measure of attitudes as opposed to analyzing group norms, thus confirming and extending previous research on the phenomenon conducted by Riffe and Stacks. The application of Q methodology provided a deeper understanding, that supported, but in some instances, altered, the interpretation of previous observations. Data from the Pre- and Post-Class Q sorts were compared to assess the impact of the class on student attitudes toward writing. This study demonstrates the realignment of student confidence and career goals that accompanies increasing acquaintance with the realities of the chosen profession provided by the initial professional class.

**Appendix 1**

**Factor Q-Sort Values for Each Statement**

No.	Statement	Factor 1	Factor 2	Factor 3	Factor 4
1	I believe that teachers should be role models	0	-1	-1	3
2	The main goal of education is to equip students with the knowledge and skills best suited to ensuring their success as citizens.	0	-1	-2	2
3	A large part of curriculum should be subjects that have real world relevance: the environment, technology, sex education, household duties and so on.	1	0	-1	2
4	Schools should aim to produce good citizens not just	0	3	0	2

	future experts in particular fields.				
5	The best way affect change of any social issue is through education	2	0	-1	0
6	I believe that the role of the teacher should be to facilitate the child's own active discovery. Teaching is not 'teaching' at all. It is an act of guiding and appreciating.	-1	0	1	0
7	An ideal education emphasizes individual differences among learners and takes into account their natural learning abilities. We have to recognize the importance of students' varying learning styles.	1	0	0	0
8	Having universal curriculum is ridiculous. Each child should be free to form their own curriculum based on individual interests and aptitudes	-1	2	0	-1
9	Each child's individual potential should guide the teacher's activities	0	-1	-1	-1
10	True understanding of anything can only come from direct experience	-1	3	2	2
11	A central for the teach is to mediate understanding for the student, moving them from an early grasp of a subject to full comprehension through whatever means proves effective.	3	-1	1	1
12	The development of any student is reliant what they are taught.	0	0	-2	-1
13	Teaching concepts is important for the content of the concept and also to develop the ability to think in concepts	3	0	-1	-1
14	Every culture has its own array of tools and traditions for understanding any subject. Schools should make use of these tools and traditions.	2	0	3	1
15	Language plays a significant role in development of a child in the development of a child. It's not only a tool for communication.	3	2	0	1
16	I believe the best teachers care for their students first and foremost. Everything else comes later.	1	0	0	1
17	We cannot hope to teach a student until we form a relationship with that student. We must know what is happening outside of the classroom in the student's life if we are going to be successful inside of it	1	2	1	1
18	Devising curriculum for any individual student is easy when we take the time to form a relationship with that student first	-1	2	2	-1
19	A central concept of any pedagogy should be happiness	0	-1	1	-3
20	We must care about the whole child, not just the mind. It is more important to feel loved	0	1	0	0
21	I believe the best teachers relinquish their power and give power to minority voices in the classroom	-1	1	3	0
22	The plurality of students voices all be given a place in the classroom	1	1	2	-3
23	We must be critical of traditional curriculum and its role in maintaining traditional power dynamics. Real world change and freedom from oppression is	2	0	-1	0

	possible by teaching students the skill of critical thinking				
24	Education is often used to oppress but it also has the potential to free the oppressed	2	-1	0	0
25	Who creates curriculum has a direct bearing on who succeeds in educational system and who fails	1	-2	3	2
26	Teachers are completely unnecessary and often impede student	-3	-1	-1	-2
27	Students are their own best teachers	-2	1	2	0
28	When a student is motivated to learn from real world situations, that is real education	1	1	0	3
29	Schools destroy children and their natural wonder with the world	-2	-2	1	-2
30	There is no need for children to attend school. They are capable of learning everything they need outside of formal education	-3	1	-2	-3
31	A priority for our educational system should be excellence in those most able to attain it.	-1	-2	-3	-2
32	Curriculum should be constructed primarily on the grounds of intellectual and cultural, rather than more generally social, values	-1	-3	-3	1
33	We can't expect kids to be good at everything, but every child is good at something	1	-3	0	-1
34	Children's own developing needs should be central to the curriculum	0	0	0	0
35	Contrary to the popular belief that education always must be always be pleasurable, I believe that the difficulties a child encounters in the classroom provide the real opportunities for learning	2	1	1	0
36	Teaching does not cause or determine learning. Learning is always unpredictable and self-determined	-2	1	1	-1
37	Programs that promote brain health, such as nutrition programs, are a vital part to successful education	0	3	-2	1
38	An ignorant teacher could still be a successful teacher True knowledge is constructed in the exchange between student and teacher.	-3	-2	2	-2
39	Literature and history, the sciences and mathematics should receive most curriculum time. Subjects like Latin, Greek, and art history have to be present in the curriculum if we are to produce educated people	-1	-2	-1	-2
40	I believe that assessment of knowledge can take many forms. A dance or drawing could be adequate substitutes for a written paper	0	2	0	-2
41	I would feel comfortable with a student submitting a high school level paper in 'texting'	-2	-3	-2	1
42	I strongly disagree with the bringing play activities into the activities into the classroom. The benefits of play are exhausted once formal schooling begins	-2	-1	-3	-1

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Title of the submission: The Role of Curriculum Directors in Wisconsin Public Schools:  
Factors that Advance Teaching and Learning

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Abstract:

**ABSTRACT**

While little is known about the role of Curriculum Directors, their position has historically been associated with the work of teaching and learning. Due to the growing sense of urgency created nationally by the legislation of No Child Left Behind, there is a present need to more deeply understand the role of Curriculum Directors as a key position in school improvement.

This descriptive multiple case study examines the role of Curriculum Directors in Wisconsin public school districts to advance teaching and learning. The perspectives of four Curriculum Directors with a reputation for playing a key role in school improvement are included in the study. The Public Education Leadership Project (PELP) Coherence Framework elements are used to provide a lens through which to analyze the work of the Curriculum Directors (Childress, Elmore, Grossman & Johnson, 2007). These framework elements include culture, structures, systems, resources, and stakeholder relationships.

The purpose of this study is to contribute to a limited body of research on the role of Directors of Instruction by examining the emerging role of Curriculum Directors, the actions and behaviors of Curriculum Directors, and the role Curriculum Directors play in district improvement. The focus of the research is to determine the ways in which Curriculum Directors in high performing public school districts use the elements identified in the PELP Coherence Framework (Childress, et al., 2007) to advance teaching and learning in their schools.

From the research emerged several key findings about the school improvement actions of Directors of Instruction. First, all four Curriculum Directors utilized the elements of culture, structures, systems, resources, and stakeholder relationships from the PELP Coherence Framework in their work to advance teaching and learning (Childress, et al., 2007). Second, the actions of the Curriculum Directors varied, as did the contexts within their respective school districts. Third, the complexities of the Curriculum Directors' roles in each district were exposed through the themes that emerged in the cross-case analysis.

This is one of the first research studies done on the role of Curriculum Directors. This qualitative study has contributed to a currently limited body of research on the ways in which Directors of Instruction go about the work of school improvement. Examining the practices of Curriculum Directors provides practical insight for school district leaders on the central problem of increasing the achievement levels of all students. The PELP Coherence Framework utilized in this study expands the reader's understanding of its usefulness in the work of successful organizations. The descriptive case studies provide an in-depth understanding of the essential role Directors of Instruction play in school improvement, and a practical perspective for looking systematically at how to improve coherence within learning organizations. Collectively, these insights provide a foundation for future research and inquiry.



“Increasing Achievement by Improving Climate”

by

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## ABSTRACT

This three year quantitative study focused on the impact of selected interventions from an integrated middle school social emotional learning program. The school specific program was created and based upon best practices and the premise that a school's learning climate can be changed negatively or positively dependent upon the adult staff's beliefs and expectations, and thus affect student achievement as such. Specifically, this study looked at the length of implementation of certain program interventions and their impact on: 1) Reading achievement as demonstrated on the Illinois State Achievement Tests; and 2) an increase in positive student learning climate as demonstrated through discipline data. Descriptive statistics demonstrated that the longer a class participated in the program, the fewer discipline instances there were. They also showed that the longer the participation, reading achievement improved for the class as a whole, as much as 3.8%, as shown through state standardized testing. Analysis of the data concerning student achievement shows the following behaviors (dependent upon the class) were reduced from 33% to 100%: Skipping class, insubordination, classroom disruption and tardiness. With regards to improving school climate, the following behaviors (dependent upon the class) were reduced from 33% to 100%: Aggressive behavior, harassment or intimidation, inappropriate comments, and verbal threats. Implications and recommendations for further research include replicating this program and study (with age appropriate changes made) at the elementary and high school levels.

**Key words:** Climate, social and emotional learning, effective schools, reading achievement, 40 developmental assets, middle school

## **Increasing Achievement by Improving Climate**

### **Introduction**

In July of 1966, James S. Coleman published the results of his landmark study entitled “The Equal Educational Opportunity Survey”. This study investigated the equality of educational opportunities, and he reported that family background and peer influences, not the school, were the major determinants of student achievement (Coleman, 1966).

In response to this report, Edmonds (1979) and Brookover and Lezotte (1977) determined to research the characteristics that positively impacted student achievement in successful schools. They did this by comparing successful schools to unsuccessful schools. Through their research, they found that there were unique processes and qualities that were similar in those schools in which students were successfully learning, regardless of their family backgrounds. With their studies, the effective schools movement was born and they were able to define seven correlates of effective and successful schools (Brookover & Lezotte, 1977; Edmonds, 1979). These correlates consist of having: 1) A clear and focused school mission; 2) a climate of high expectations for student success; 3) instructional leadership; 4) frequent monitoring of student progress; 5) an opportunity to learn; 6) a safe and orderly environment; and 7) positive home-school relationships.

Brookover and Lezotte (1977) also determined that the learning climate in a school explained as much of the student achievement differences as did his or her socioeconomic status. Continued research in effective and successful schools has shown that the school learning climate is highly associated with levels of student achievement.

Studies and reports published in the 1980s focused on what educators needed to do or change so as to achieve school success, increase student achievement, and demonstrate increased accountability. One such report, “A Nation At Risk” (National Commission on Excellence on Education, 1983), concluded that the decline of American student performance was often due to inadequacies in the way that the educational processes were conducted. The 1990s brought forth additional research relating to these educational processes including the molding of student character (Search Institute, 1990), and the handling of student behavior and discipline (Colvin, Kameenui, & Sugai, 1993), as well as what kind of an impact these processes had on student achievement. As a result of these historical initial studies on student achievement and school effectiveness, these research topics continue to be on the forefront today.

Throughout education’s history, as well as our nation’s history, the emphasis on increased student achievement and accountability has never been higher than is found in all perspectives of education today. This increased emphasis has steadily manifested itself every year through the passage of new and unfunded federal mandates such as the “No Child Left Behind Act” (U. S. Government, 2001), as well as new and unfounded individual state mandates.

In Illinois, one such mandate is the Children's Mental Health Act of 2003 (Illinois State Board of Education, 2013). It requires all school districts to have a K-12 social and emotional learning program that is aligned to ten standards that the Illinois State Board of Education has adopted. Each standard includes goals, age appropriate benchmarks, and performance descriptors that focus on quality social and emotional instruction in which students learn to recognize and manage their emotions, demonstrate caring and concern

for others, establish positive relationships, make responsible decisions, and handle challenging situations constructively (Illinois State Board of Education, 2013). The rationale for this act is that a quality student social and emotional learning program that is implemented with fidelity, can result in positive outcomes such as: 1) Students feeling connected to the school; 2) a reduction in student absenteeism and suspensions; 3) improved student academic outcomes; and 4) a safe, caring, participatory and responsive school climate will result (Illinois State Board of Education, 2013).

A meta-analysis of K-12 school-based social and emotional learning programs involving over 270,000 students demonstrated that those who have participated in these programs improved standardized test scores by up to 11 percentile points as compared to control groups, and there was a decline in disruptive behaviors (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011).

### **Background of the Study**

The Indian Creek School District is a rural PK-12 school district, located approximately 75 miles west of Chicago, Illinois, and it encompasses the communities of Shabbona, Waterman, Lee, and Rollo. The district's mission statement is "Striving for excellence in learning" and all schools in the district subscribe to this mission statement. Teachers are partners with the administration in serving that mission. Historically, the district has been a fairly homogeneous middle class district; however, data from 2008-2009 (the baseline data year of this study) through 2011-2012 (the last year of this study), reveal that the district's demographics, including those at Indian Creek Middle School have changed significantly.

One of these changes is with regards to dropping enrollments at both the district level and the middle school level. During the 2008-2009 school year, the district had a student enrollment of 873 students of which 194 were at the middle school level; however, by 2011-2012 the district population had dropped to 803 students, with 187 of them in the middle school.

In addition, the middle school's demographics have seen a rise in the student mobility rate (by 0.80%), a rise in students who have limited English proficiency (by 1.6%), and a rise in students who fall into the low income category (by 7% which now means that 24.5% of all middle school students, grades 6-8 are in this category).

### **Need for the Study**

With the passage of the 2001 "No Child Left Behind Act" (U.S. Government, 2001), the accountability bar for student achievement is to be raised by 7.5% for every year until 2014 (the year by which all students are to be at the 100% achievement level). An additional requirement listed in this act is that all public schools are to establish a safe learning environment. Various researchers have noted that a high frequency of student discipline incidents is a negative construct that hinders teachers from teaching, and as a result, students are unable to develop the needed skills to successfully pass state standardized testing (Howard, Howell, & Brainard, 1987; Hernandez & Seem, 2004). Coupling this mandate with the 2003 Illinois social and emotional learning program mandate, as well as research that has indicated that if schools have minimal student discipline problems, students have a better opportunity to learn (NCES, 2005; Howard et al, 1987), this study was needed to determine if an aligned integrated middle school

social and emotional learning program would have any impact on discipline reduction or reading achievement, as increasing student reading achievement is a yearly district goal.

It is important to note at this time, that during the 2007-2008 and 2008-2009 school years, each school in the Indian Creek District went through a social and emotional learning curriculum audit, determining which of the mandated Illinois standards, goals, and descriptors were already in place and which standards needed to be added where, as well as which areas needed strengthening through the additional curriculum integration of goals, descriptors, best practices and research-based strategies. In 2009-2010, this newly revised social and emotional learning program was implemented at Indian Creek Middle School. It was also during this time frame that Illinois required each school district to create and prepare a “Response to Intervention” program that was to include both behavioral and academic learning interventions for students at all grade levels.

Previous to this timeframe, as a part of their middle school philosophy, Indian Creek Middle School already had various aspects of a social and emotional learning program in place. After the curriculum audit in this area, the revised program maintained its former name of “RECS” which stands for “Respect, Effort, Courtesy, Safety”. With this former program, students who had no detentions or suspensions during a quarter were invited to attend an end-of-the quarter RECS rewards activity (i.e. attending a semi-pro baseball game, attending an all school bowling party, etc.). With the new program, this has not changed, nor has the fact that every expectation for middle school students was and is related to one of the four RECS words. During any teachable moment, staff will speak with students about their conduct and choices in terms of RECS—respect,

effort, courtesy, and safety. While these practices continue, as a result of the newly revised social and emotional learning program, additional strategies have been included such as: 1) As a part of advisory or a class, specific pertinent social and emotional topic lessons are taught (i.e. independence, resiliency, self-esteem, anti-bullying) as a part of advisory or integrated into a class lesson; 2) the AIMSWEB behavioral screener is used to target individual strategies towards the individual needs of students); 3) small group skills set work is provided by an outside source; 4) whole group skills set work is provided by the social worker in areas such as conflict resolution, good problem-solving, effective decision-making, etc.; 5) leadership skills are explored through an exploratory class; 6) community service participation projects have been increased; and 7) there is class integration for teaching life skills such as being respectful of diversity, being organized, and making healthy lifestyle choices.

### **Purpose of the Study**

The purposes of this three-year longitudinal study were to determine if the newly revised integrated social and emotional learning program at Indian Creek Middle School was successful in reducing discipline instances, and to also determine if there was any relationship between middle school student discipline incidents and middle school reading achievement as measured by Illinois state standardized testing. Because increased reading achievement is a yearly district goal, student progress in this area is frequently monitored through teacher-made tests, textbook company assessments and standardized testing procedures that include AIMSWEB, NWEA's "Measures of Academic Progress", and the Illinois State Achievement Tests, with results being shared with parents.

## Conceptual Framework

The conceptual framework for this study is made up of certain assets from the 40 developmental assets (Search Institute, 1990) that compliment each of the seven correlates of effective schools (Brookover & Lezotte, 1977; Edmonds, 1979). In 1990, the Search Institute (Search Institute, 1990) released this developmental framework of 40 skills, experiences, relationships, and behaviors that have demonstrated that the more of them that a child is able to acquire, the better his or her chances are of succeeding in school and becoming a happy, healthy, and contributing member of the community and society. Among those assets that complement the effective schools research are: 1) The school provides a caring, encouraging environment; 2) parents are actively involved in helping the child succeed in school; 3) the school provides clear rules and consequences; 4) the young person feels safe at home, school, and in the neighborhood; 5) adults model positive, responsible behavior; 6) there are high expectations for the young person; 7) the young person is actively engaged in learning; and 8) the young person is motivated to do well in school. Additional important assets include: 1) the young person acts on convictions and stands up for her or his beliefs; 2) the young person tells the truth even when it is not easy; 3) the young person accepts and takes personal responsibility; 4) the young person has empathy, sensitivity, and friendship skills; 5) the young person has a knowledge of and comfort with people of different cultural, racial, ethnic backgrounds; and 6) and the young person seeks to resolve conflict non-violently. All of the above stated assets easily work in tandem with the seven correlates of the effective schools research (as explained below).

The first correlate of an effective school is that of “having a clear school mission”. As previously noted the mission statement of Indian Creek Schools is to “strive for excellence in learning”. This clear mission of excellence is defined by having a staff and leadership team that share an understanding of and commitment to accountability, instructional goals, priorities, and assessment procedures (Lezotte, 1991). It also includes the commitment of motivation for both students and staff.

Having effective instructional leadership is considered to be a second correlate of an effective school. The principal is a positive role model, and is not the only leader, but rather a “leader of leaders” (Lezotte, 1991, p. 3), one who collaborates with teachers on decisions regarding instructional goals.

This correlate is enacted on a daily basis in the Indian Creek School District through the use of whole faculty study groups (Murphy & Lick, 2005). Since the 2007-2008 school year, all administrators and certified staff have been a member of a whole faculty study group (WFSG) since the 2007-2008 school year. Each of these groups of four to six members studies data pertaining to a specific student improvement focus, whether it is behavioral or academic. After data analysis, the WFSG offers hypotheses as to why the data says what it says, and strategies for improvement to the whole school. All staff and the principal then determine which strategies are right for implementation in their school. Strategies are planned for and implemented, data is then collected and analyzed again, and the cycle begins anew, with the emphasis on continuous school improvement and increased student achievement. It was through the study of WFSGs and the results of Indian Creek Middle School’s social and emotional learning curriculum

audit that new interventions, strategies, processes, and best practices were integrated into the existing middle school social and emotional learning program.

A third correlate of an effective school (and one of the developmental assets) is that of there being high expectations for success. This concept emphasizes having a school climate in which the staff believes and demonstrates that all students can achieve mastery of the school's essential curriculum (Lezotte, 2001). Similar to the third correlate is the fourth correlate (and again one of the developmental assets) is that of having “a safe and orderly environment” (Lezotte, 2001). This means that the school is one in which all are free from physical harm and all are able to show respect for human diversity. These schools are places where undesirable behaviors are eliminated and where desirable behaviors are taught and modeled by all.

The fifth correlate of an effective school is that of frequent monitoring of progress (Lezotte, 2001). For Indian Creek Middle School, this means the monitoring of student achievement, as well as negative student behaviors that impact that achievement, and the school climate. In 2008-2009 an in-district data warehouse was created so that student discipline incidents could be monitored more discreetly due to increasing instances of discipline. These increasing instances were impacting teachers' ability to keep a safe and orderly environment, as well as the school's learning climate, even though teachers worked to keep all students on task, while providing them with multiple opportunities to learn {correlate number six “providing students with opportunities to learn and time on task” (Lezotte, 2001)}. Data that year indicated that more bullying instances (threats, harassment, aggression, intimidation) were occurring which impacted the learning climate, and thus student achievement. As defined by the general assembly in Illinois

school code, bullying is any behavior that causes physical, psychological, and emotional harm to a student and that interferes with his or her ability to learn and to participate in school activities. These behaviors were critical to monitor as being bullied shows that it can lead to academic problems such as a decrease in school performance, absenteeism, truancy, dropping out, peer problems, and health problems (Bonds & Stoker, 2000; Horne, Bartolomucci, & Newman-Carlson, 2003).

The seventh correlate of an effective school is that of having a positive and strong home-school relationship in which parents are actively involved in their child's education (Lezotte, 2001). The schools in the Indian Creek School District have worked diligently to be a partner with parents. For the baseline data year of this study (2008-2009) and the ending year of the study (2011-2012), the Illinois School Report Cards for Indian Creek Middle School indicate that it had and maintained 100% parent contact.

The conceptual framework for this study pertaining to the impact of a newly revised aligned and integrated middle school social and emotional learning program is appropriate as research has determined that when school improvement processes based upon the effective schools research are implemented, student achievement either improves or at the least, remains the same (Association of Effective Schools, 1996).

### **Research Questions**

The guiding research questions for this study were:

1. As a result of the revised and integrated middle school social and emotional learning program, by grade level, will there be a decrease of discipline instances?
2. As a result of the revised and integrated middle school social and emotional learning program, by grade level, will there be an impact on reading achievement?

3. By grade level, will discipline instances diminish the longer that a grade level has been exposed to the revised and integrated middle school social and emotional learning program?
4. For the top 30 regular education discipline offenders in the 8<sup>th</sup> grade class of 2011-2012 who have had three years of the revised and integrated middle school social and emotional learning program, is there any relationship between the number of their discipline instances and their reading achievement from their first year of interventions to the last year?

### **Null Hypotheses of the Study**

1. By grade level, there will be no decrease in discipline instances as a result of the revised and integrated middle school social and emotional learning program.
2. By grade level, there will be no impact on reading achievement as a result of the revised and integrated middle school social and emotional learning program.
3. By grade level, the number of discipline instances will not diminish the longer that a grade level has been exposed to the revised and integrated middle school social and emotional learning program.
4. There will be no statistically significant correlation between the discipline instances and the reading achievement for the top 30 regular education student discipline offenders in the 8<sup>th</sup> grade class of 2011-2012, as measured from their first year of the interventions to the last year.

### **Methodology**

While all types of discipline instances were monitored through use of an in-house data warehouse (begun during the 2008-2009 school year), for the purpose of this three

year longitudinal study, those discipline data that most negatively impacted school climate (threats, harassment, aggression, or intimidation) and those that most negatively impacted student achievement (disrespectfulness to teachers, disruptions, insubordination, missing or late work, cheating, being tardy, or skipping class) were studied. Descriptive statistics on these behaviors were performed on middle school grade level data for the 2009-2010, 2010-2011, and 2011-2012 school years to determine if the percentage of discipline instances had gone up or down in each of the following areas: Threats, aggression, intimidation or harassment, inappropriate/disrespectful comments, disrespectfulness to a teacher, classroom disruptions, insubordination, missing or late work, being tardy, or skipping class. Descriptive statistics were also performed (again on middle school grade level data for the same time period) to determine if the number of years of social and emotional learning program interventions that a middle school grade level had received had any impact on their number of discipline instances. Then, descriptive statistics (on middle school grade level data for the same time period) were performed to determine if the number of discipline instances had any impact on the middle school grade level's reading achievement. Finally, a test for the Pearson product moment correlation coefficient was performed on data from the top 30 regular education discipline offenders from the 8<sup>th</sup> class of 2011-2012 (representing 48% of the class). This was done so as to determine if there was a correlation between their discipline instances and reading achievement.

### **Findings**

There were four null hypotheses in this study that encompassed four research questions. The first null hypothesis was rejected. It stated that there would be no decrease

in discipline instances as a result of the revised and integrated middle school social and emotional learning program. Descriptive statistics demonstrated that the longer a class participated in the program, the fewer discipline instances there were and thus a more positive learning climate was present. With regards to improving school climate, the following behaviors (dependent upon the class) were reduced from 33% to 100%: Aggressive behavior, harassment or intimidation, inappropriate/disrespectful student comments, and verbal threats.

The second null hypothesis was also rejected. It stated that there would be no impact on reading achievement as a result of the revised and integrated middle school social and emotional learning program. Descriptive statistics demonstrated that the longer a class participated in the new program, reading achievement either stayed the same or it improved for the class as a whole, as shown through state standardized testing. For the class that had only one year of the program, their reading achievement went up by a .80 percentile rank; for the class that had two years of the program, their reading achievement stayed flat and they did not regress, and for the class that had three years of the program, their reading achievement went up by 3.80 percentile ranks. Analysis of the behavioral data concerning student achievement shows the following behaviors (dependent upon the class) were reduced from 33% to 100%: Skipping class, missing or late work, disrespectfulness to a teacher, insubordination, classroom disruption and tardiness.

The third null hypothesis was rejected too. It stated that by grade level, the number of discipline instances would not diminish the longer that a grade level was exposed to the revised and integrated middle school social and emotional learning program. Descriptive statistics and data charts demonstrated that after about one and one-

fourth full school years of the social and emotional learning program, discipline by class began to decrease overall. The class that participated in the program for one year increased its discipline instances by 3, while the class participating in the program for two years reduced its discipline instances by 30. The class that participated in the program for three years reduced its discipline instances by 39.

The fourth null hypothesis was accepted. It stated that there would be no statistically significant correlation between the number of discipline instances and the reading achievement for the top 30 regular education student discipline offenders in the 8<sup>th</sup> grade class of 2011-2012 (representing 48% of the class), as measured from their first year of the new revised and integrated middle school social and emotional learning program to the last year. The Pearson product moment correlation coefficient showed a very low positive correlation ( $r = .24$ ). While the P value of this correlation coefficient at .05 was not statistically significant, the very low positive correlation could mean that because students were now spending more time on task and less time was being used for discipline, a more positive learning climate was present. In turn, this offered additional time and opportunities for success for all students in the area of reading achievement; however, the relationship is very weak.

### **Conclusions**

Specifically, this three year longitudinal study looked at the length of implementation of certain social and emotional learning program interventions and their impact on: 1) Reading achievement as demonstrated on the Illinois State Achievement Tests; and 2) an increase in positive student learning climate as demonstrated through discipline data. The findings of this study indicate that while a statistically significant and

strong correlation between decreased discipline instances and increased reading achievement could not be found (when using individual student cases), data for classes as a whole indicated that the longer a class participated in the newly revised social and emotional middle school program, the more apt it was to show no regression or an increase in reading achievement, as well as a decrease in the class number of discipline instances. Discipline instances specifically monitored for this study were those that impacted school climate (verbal threats, harassment or intimidation, aggression, and inappropriate/disrespectful student comments), and those that impacted student achievement (disrespectfulness to a teacher, classroom disruptions, insubordination, missing or late work, being tardy, or skipping class).

As a result of this study, it is recommended that middle schools that would like to see a decrease in student discipline and an increase in reading achievement perform some type of an audit that concentrates on what they are doing in terms of: 1) Providing a social and emotional learning program; 2) eliminating specific student behaviors that negatively impact the school climate; and 3) eliminating specific student behaviors that negatively impact student achievement. Recommendations for further research include replicating this program and study (with age appropriate changes made) at the elementary and high school levels.

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## **Stereotype Threat for Female Students in Engineering Education: Data Mining in Media Databases and students' Drawings**

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### **Poster Abstract**

In the field of engineering education, female college students are regarded as one of minority groups. From a student admission's perspective, male college students dominate in the engineering schools. The unbalanced population may influence the overall development of engineering education, which is one of elements in STEM (Science, Technology, Engineering and Mathematics). In the literature, some scholars attribute this phenomenon to society's stereotype threat for female students.

The purpose of the current research is to explore how a stereotype threat exists in online media databases and students' drawings. Two studies were conducted to fulfill the research objective. One quasi-experimental study analyzed current media databases, including Google Image and Yahoo image. A content analysis were performed to compare the ratio between male and female engineering images. The findings show that male engineer images dominate in the media databases. About 90 percent of searched engineer images are male.

Another qualitative study examined 150 elementary students' drawings regarding the engineer image. The content analysis was also used to observe the drawing contents. The results show that almost 95 percent of students perceived that engineer should be male. Students' drawings contain several stereotype information regarding the definition of an engineer.

**Keywords:** Female engineering students, data mining, stereotype threat, media databases

## Proceedings Submission - Submission ID Number 1017

1. Title: BIRACIAL COLLEGE STUDENT: HOW DO THEY SELF IDENTIFY AND WHAT ATTITUDES DO THEY HOLD?
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6. **Presentation Summary/Abstract**

### **Biracial College Student: How do They Self-Identify and What Attitudes Do They Hold?**

One of the fastest growing sub-groups of color at today's colleges and universities is the bi-racial/multiracial population. This trend is predicted to continue. In fact, it is estimated that one in five new students will identify as bi/multiracial by 2050 (Brown, 2009).

While race is often thought of as static (Gossett, 1997) and is used to delineate group membership, researchers of identity theory suggest that biracial individuals may identify along a continuum of racial identities (Root, 1996; Renn, 2008; Rockquemore & Brunsma, 2002, 2008). How one chooses to self-identify is impacted by parenting/family practices and experiences (Katz & Kofkin, 1977; Rollins, 2009; Lyda, 2008), physical appearance (Renn, 2000), cultural knowledge, and peer culture (Renn, 2008). Root (1996) suggests that multiracial individuals are constantly negotiating multiple perspectives in order to feel socially accepted in mainstream cultural domains. Whether or not one's self-identity is validated by others may have an impact on the biracial students' sense of efficacy (Bracey, Bamaca, & Umana-Taylor, 2004).

As this population of bi/multiracial people grows, some of "the ways we do things" are being challenged. The new U.S. Department of Education guidelines require colleges to report students who claim membership in more than one racial category as belonging to "two or more

racess” (Schmidt, 2010). Heated arguments were held regarding the addition of a “two or more races” category to the 2000 U.S. Census (Thornton, 2009). Some multicultural groups feel this addition does not go far enough. They advocate for the addition of a “biracial” category to the Census form. And while there are racial tensions in this country among various racial/ethnic groups, what attitudes do biracial students hold regarding the state of race in the United States? As this population increases, greater attention should be directed toward an understanding of the attitudes and perspectives held by this community. Increased knowledge can assist parents, communities, employers, and college and universities to create a welcoming environment for this growing population.

Several racial identity theories have been developed and studied. The conceptual framework for this study was built around racial identity theories of Root (1996), Kristen (2004) and Rockquemore & Brunisma (2002) which consider factors that impact how the biracial individual self-identifies.

Maria Root proposed a theory of identity formation that relies on the individual’s abilities to be comfortable with their definition of themselves at any given moment while crossing identity borders (Root, 1996). Renn (2008) identifies five patterns of identity ranging from a mono-racial identity, to multiple monoracial identities, a distinctly multiracial identity, no racial identity, to a situational identity. Rockquemore & Brunisma (2002) proposes a “mixed race” identity model with four categories: border identity where individuals define themselves as belonging to a third and separate category, a singular monoracial identity, a transcendent identity in which one rejects the notion of race and its categories, and a protean identity in which individuals changes their being as they move from group to groups and through various social contexts of everyday life.

A number of studies have focused on the Black/White biracial population (Rockquemore & Brunnsma, 2002; Brown, 2001), while fewer studies have considered the variety of multiracial mixtures. Additionally, studies that have focused on the biracial college student population are limited. Attending college and the exposure to a broader more diverse group of peers may lead biracial students to explore, define and redefine themselves and how they chose to self-identify (King, 2008).

The overall purpose of the descriptive study was to explore the experiences of biracial students attending a predominately white research university. More specifically, the objectives of this study were to examine:

- How biracial college students view their racial identity.
- Factors related to student's parental/family upbringing.
- The attitudes held by biracial college students regarding race in the United States.
- The level of interaction which occurs between biracial students and others on the college campus.
- Recommendations of biracial students for creating a welcoming inclusive college environment for biracial students.

The population for this study included college students at a predominately white research university in the northeastern United States. Two hundred and forty eight (248) students indicated a willingness to participate in the study. Two hundred and one (201) of those who agreed to participate actually completed the survey.

This presentation will present the results of the study, including quantitative, as well as, qualitative responses. The results of this study will be discussed in relation to existing literature

on the subject. Conclusions will be drawn and recommendations based on the findings will be offered. This presentation is intended to not only present results of the study, but also to stimulate a critical discussion on the topics. Therefore a ninety (90) minute session is requested to allow adequate time for discussion and debate.

**Developing Research Tools for Young Children’s Interactions  
with Mathematics Apps on the iPad**

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The Virtual Manipulatives Research Group at Utah State University

*Abstract*

*This project focused on building theory and knowledge about the nature of young children’s ways of thinking and interacting with virtual manipulatives using touch-screen mathematics apps. To conduct cutting edge research on novel topics such as this requires researchers to develop new and different tools to be used to answer unique questions, collect new kinds of data, and analyze the data in different ways. During the project, researchers interviewed 90 children ages 3 to 8 while the children interacted with mathematics apps on iPads. A variety of research tools needed to be developed to conduct the research. These tools included: interview protocols, procedures for app selection, observation protocols, parent surveys and interaction protocols, and data analysis protocols. This paper reports on the processes researchers used to develop the research tools for the project.*

A virtual manipulative is defined as “an interactive, Web-based visual representation of a dynamic object that presents opportunities for constructing mathematical knowledge” (Moyer, Bolyard, & Spikell, 2002, p. 373). Until recently, virtual manipulatives have only been available through mouse-driven apps for the computer. In the past few years, the iPad has emerged as a platform for virtual manipulative apps. A meta-analysis on virtual manipulatives by Moyer-

Packenham and Westenskow (2013) revealed that the research conducted to date shows that virtual manipulatives produce positive moderate effects (0.35) when compared with other instructional formats. Five key affordances of virtual manipulatives have been found to impact learning: focused constraint, simultaneous linking, efficient precision, motivation, and creative variation. Today there are few studies that examine mathematics learning on the iPad. Some of the current studies conducted in the past few years include Paek, Hoffman, Saravanos, Black, and Kinzer's (2011) study with 59 second-grade students. Children in the study demonstrated significant learning gains in both the mouse-driven and iPad touch-screen modalities when playing a virtual manipulatives multiplication game. Barendregt, Lindström, Rietz-Leppänen, Holgersson, and Ottosson (2012) designed and piloted an iPad app intended to help develop conceptual subitizing skills, and concluded that the app helped different students develop different skills in subitizing. These studies are part of a growing body of research on virtual manipulatives apps for the iPad.

### **Summary of the Study**

The purpose of the project on which this paper is based was to build theory and knowledge about the nature of young children's ways of thinking and interacting with virtual manipulative apps on the iPad. The participants were 90 children, ages 3 to 8 including 30 preschool children ages 3-4, 30 children in kindergarten ages 5-6, and 30 children in grade 2 ages 7-8. Children participated in 20-30 minute interviews and interacted with six different mathematics apps under the direction of an interviewer. The interview rooms were equipped with two-way mirrors, audio observer booths, and built-in video cameras. Interactions during the interviews were recorded using a wall-mounted camera and a wearable Go-Pro camera to capture children's manipulations of the mathematics apps.

Results of the study indicated that children's learning improved in terms of speed and accuracy between pre- and post-tests. Researchers identified app affordances that supported or hindered children's learning, which is informative to designers of mathematics learning apps for young children. To conduct this study, researchers created a variety of research tools that were not readily available because research on children's interactions with virtual manipulative apps is still in its infancy. In the sections below, we describe our development process used to create research tools for the study. Schubert (2009) suggests that the development of these tools be

based on current theories related to the phenomenon of interest and the researcher's own experience with observing the phenomenon.

## **Developing Research Tools for Cutting Edge Questions**

### **Selecting and Pilot Testing Apps with Children**

The first activity of the research team was to select the apps for inclusion in the research project. The mathematics concepts of seriation, subitizing, skip counting, and place value were selected for study with young children because these concepts are critical foundations to later mathematics learning. Seriation, the ability to sort and order objects according to a defined attribute (often by length or size), is a logical reasoning task that is commonly used in kindergarten mathematics assessments and early numeracy tests. Perceptual subitizing, is the ability to perceive an amount instantly, without counting. When children learn to conceptually subitize, they use their perceptual subitizing skills to combine groups to compose an amount, learn how numbers are composed and decomposed, and gain a visual understanding of quantity. These skills are interdependent with later mathematics skills, such as skip counting (e.g., 2, 4, 6, 8, 10, ...) and understanding the base-10 place value system (Sarama & Clements, 2009). Current research indicates the existence of consistent relationships between counting, number relationships and basic operations, and later mathematics achievement (Clements & Sarama, 2007).

Research team members reviewed a variety of different mathematics apps for inclusion in the interviews in the study. These apps were then tested with 12 children in informal interactions. During the informal interactions, researchers took notes while observing how the children interacted with the apps. These notes included information on app affordances, difficulties children had with the apps, ease of use, and learning opportunities presented by the apps. These notes were used to help determine which apps would be used in the interviews with the children. Base-10 blocks, used for counting and place value, were selected for the pre- and post-tests in preschool, kindergarten, and grade 2 so that researchers could examine children's learning progressions across all age groups of children. The other apps that were selected for each age group represented different concepts including seriation for preschoolers, subitizing for kindergarteners, and skip counting for second graders. Appendix A shows the apps that were selected by the research team.

### **Developing Interview Protocols to Use with iPads**

The next phase in the development of our research tools was to create and refine three different interview protocols for each of the three age groups. Interviews were designed to last 20-30 minutes, and included two brief learning sequences on two different mathematics concepts. Each interview included: a pre-test, two learning activities, and a post-test for each mathematics concept. The following table shows the progression of each interview with each age group and includes the mathematics app names that were used during the interviews.

**Sequence of the Interviews**

<b>Interview</b>	<b>Grade Pre</b>	<b>Grade K</b>	<b>Grade 2</b>
<b>App #1 (pre)</b>	Pink tower: free moving	10 Frame	100s chart
<b>App #2 (learning)</b>	Pink tower: tapping	Hungry guppy	Frog number line
<b>App #3 (learning)</b>	Red rods	Fingu	Counting beads
<b>App #1 (post)</b>	Pink tower: free moving	10 Frame	100s chart
<b>App #4 (pre)</b>	Base-10 blocks	Base-10 blocks	Base-10 blocks
<b>App #5 (learning)</b>	Base-10 blocks: 1-5	Base-10 blocks: 11-20	Zoom number line
<b>App #6 (learning)</b>	Base-10 blocks: numerals	Base-10 blocks: numerals	Place value cards
<b>App #4 (post)</b>	Base-10 blocks	Base-10 blocks	Base-10 blocks

A draft of the interview protocols for each age group was developed, and members of the research team piloted the first draft of the interview protocols with children in local schools. The results of piloting the protocols with children helped researchers to refine the tasks in the kindergarten protocol and alerted the researchers that the grade 2 protocol tasks and apps were too difficult. Many of the apps originally chosen for grade 2 did not meet the needs of the children or the study and were changed. Wording changes were made to the kindergarten protocol. A completely revised protocol for grade 2 was piloted using a new set of apps and tasks. Final revisions were made to all of the protocols during a team meeting.

Next, members of the research team were trained as interviewers using a final draft of each of the protocols. These interview training sessions were conducted in the clinical rooms at the university where the interviews in the study would take place. Some members of the research team took the interviewer’s role in the training sessions; other members of the team took the child’s role. This allowed team members to practice their interviewing skills and to become familiar with the interview protocols.

The final step in constructing the interview protocol was to conduct clinical pilot interviews with 10 real children in the interview rooms. These clinical pilot interviews also allowed the observers to try out their observation protocols. It also allowed the technical team opportunities to test the camera recording equipment for the wall-mounted video cameras and the wearable GoPro video cameras. This pilot process allowed each researcher to understand and practice his or her role for the pending interviews. Final revisions were made to the interview protocols during these sessions. Appendix B shows a portion of the interview protocol for the kindergarten place value concept.

### **Developing an Observation Protocol for the Clinical Setting**

The research team also developed an observation protocol for the purposes of capturing information in real time during the interview and of supplementing the video data. Researchers constructed the observation protocol based on notes taken during the interview protocol piloting and training. The observation protocol included sections for the pre-test, activity A, activity B, and post-test for each mathematics concept. Therefore, there were eight segments of time that occurred during the interview that were captured on the observation protocol. The observation protocol asked observers to make note of verbal utterances (including terminology), counting and number strategies used, purposeful or unhelpful movements (hand gestures or virtual manipulatives), errors and correction of errors, affective responses, and interviewer actions and responses. The observers were also asked to make note if anything unique or noteworthy happened during the interview. A draft version of this protocol was created during the research group's training session and tested during the 10 clinical pilot interviews with children. Based on these two piloting experiences, the observation protocol was refined and finalized for use with the interviews.

### **Developing a Parent Survey and Interaction Protocol for the Clinical Setting**

Important research tools for interacting with the parents of the children in the study were the parent survey and the interaction protocol. The parent survey requested background and demographic information about the child, parents, and the availability and use of personal touchscreen devices at home and at school. The interaction protocol guided the researchers on what to do and say while interfacing with the parents and children.

The interaction protocol ensured that the interaction with the parent and child began by explaining the interview procedures to the parent and child, showing the parent and child the

interview room and the observation booth, and asking the parent to read and sign consent forms. Parents had the option of staying with their child in the interview room or observing their child from the observation booth. During and after the observation, parents were asked to complete the background and demographic survey about their child. At the end of the interview, researchers gave parents a one-page summary of the research being conducted in the project and gave each child a small toy for participating in the project. The interaction protocol detailed each of these steps so that each interview was conducted in a similar manner.

The parent survey and interaction protocol were developed as researchers met to determine efficient and standardized procedures for conducting the interviews and collecting information from the parents. Draft versions were created for the research team's training sessions and tested during the 10 clinical pilot interviews with children. Based on these two piloting experiences, and meetings and discussions by the research team, the survey and interaction protocol were refined and finalized for use with the interviews.

### **Developing Protocols to Analyze iPad Interaction Data**

Over a five-month period, 90 children participated in clinical interviews. Upon completion of the interviews, researchers developed several different analysis protocols. With large amounts of cataloged video data, it was important to develop analysis protocols that would be useful in answering a variety of questions. Unique protocols were developed for each age group to accommodate the different apps and tasks used with each group.

Researchers developed one type of analysis protocol to examine speed and accuracy in the pre- and post-test portions of the interviews. To develop the first analysis protocol that focused on changes in speed and accuracy, groups of researchers met to identify actions in the video data indicating measures of speed and accuracy that could be identified in both the pre-test and post-test portions of the interviews. Because there were different apps and tasks used with each group, a different speed and accuracy protocol was created for each age group. Next researchers tested the protocols by examining three interviews within each age group. After testing each protocol, the research team made adjustments to these analysis protocols before coding the entire set of 90 interviews for speed and accuracy indicators.

A similar process was used in the development of protocols to examine children's learning progressions throughout the interviews. Researchers reviewed the literature on children's learning progressions and trajectories for developing mathematical competencies in

counting, skip counting, place value, seriation and subitizing (Sarama & Clements, 2009). Next, researchers identified the possible competencies that children had the opportunity to learn and exhibit using each app. Therefore, the analysis protocols were based on the elements of the learning progression that the children had the opportunity to learn or exhibit when interacting with each iPad app during the interviews. For example, a child was not expected to exhibit a particular mathematical competency if there was no opportunity to interact with the mathematics apps to demonstrate that competency. The analysis protocols also accounted for affordances of each app to support or hinder the child's learning. Researchers tested the learning progressions protocols on three interviews from each age group before making adjustments and coding the entire set of 90 videos. To ensure that the protocols accurately captured the data for our research questions and to ensure reliable and accurate coding, between 10-20% of the videos were double-coded by two researchers for each type of analysis protocol.

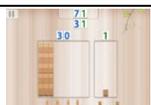
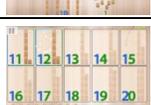
### **Summary**

This paper focused on the processes our research team used to develop new tools for novel and unique research situations. When research questions are on the cutting edge of any field, new tools are often needed for the collection and analysis of the data. We hope that this paper provides a glimpse into the processes for creating high quality tools for novel research situations.

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**APPENDIX A**  
**Mathematics Apps Selected for the Pre-test, Post-test and Learning Activities**

	Base-10 Concepts		Seriation/Subitizing/Skip Counting	
Preschool	Pre/Post Montessori Numbers (Quantity: 1-9)		Pre/Post Pink Tower (Free Moving)	
	Activity A Montessori Numbers (1 to 20: 1-5)		Activity A Pink Tower (Card #12)	
	Activity B Montessori Numbers (Numerals from Quantity: 1-9)		Activity B Intro to Math (Red Rods)	
Kindergarten	Pre/Post Montessori Numbers (Quantity Activity: 10-99)		Pre/Post Friends of Ten (Teaching Tool)	
	Activity A Montessori Numbers (1 to 20: 11-20)		Activity A Hungry Guppy (Dots: four dots of the same color)	
	Activity B Montessori Numbers (Numerals from Quantity: 10-99)		Activity B Fingu (Level 1)	
Grade 2	Pre/Post Montessori Numbers (Quantity: 100-999)		Pre/Post 100s Board	
	Activity A Math Motion Zoom (Levels 2-4)		Activity A Number Lines (Skip Counting Test)	
	Activity B Place Value Cards (3-digit problems without zeros)		Activity B Skip Counting Beads	

## APPENDIX B

### Portion of the Kindergarten Interview Protocol

#### Kindergarten- Ages 5 to 6

##### Base Ten Activities A and B

**Activity A-** Montessori Numbers-"1 to 20" Activity, Difficulty Level 11 – 20 (3 minutes)

Turn sound on. Listen to the app say each number.

**SAY:** Here we have some more ten sticks and ones. We'll use them to build some more number models.

**SAY:** Can you build the model of the number 11 here? **SHOW**

*\*Let the child build with all ones if this is the method they choose.*

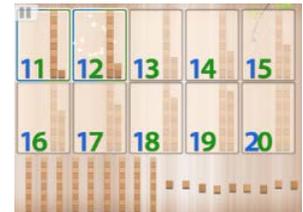
**SAY:** Can you build the model of 15 here? **SHOW**

*\*If the child begins building the 10 with ones*

**SAY:** Can you think of a faster way to build 10?

**SAY:** Can you build the model of 20 here?

*\*If the child begins building the 10 with ones* **SAY:** Can you think of a faster way to build 10?



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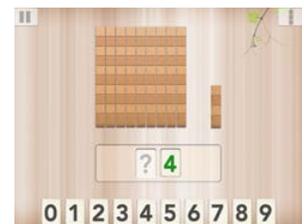
**Activity B-** Montessori Numbers-"Numerals from Quantity" Activity, Difficulty Level 10 -99 (3 minutes)

**SAY:** In this activity we'll count the base ten blocks and then move the numerals to show how many there are. I will do this first.

**SHOW:** Count the blocks aloud and touch each one.

Move the correct digit "cards" to the correct digit places.

**SAY:** Now it's your turn. Can you count the blocks out loud? Then choose the right numerals to match the number of blocks?



*\*Bring up a new problem by touching "replay." Make sure that students only work on identifying quantities equal to or less than 50. If a number higher than this is generated exit to the main menu and re-enter.*

*\*Student work for 4 minutes or complete 3 problems, whichever comes first, before moving to the posttest.*

*\*Allow the student to work for two minutes before giving a correction. Choose from those below.*

**Title: Helping Those with Learning Differences: Priceless**

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## Helping Those with Learning Differences: Priceless

The problems facing America's public schools are legion. Woefully inadequate performance on standardized mathematics and reading examinations, (2011, Hu) a steady decline in respect afforded teachers by societal mores; draconian cutbacks in financial assistance to primary and secondary education nation-wide are just a few. The list goes on. Often missed in this mix of educational maladies is the perfect storm that is raging in classrooms across the country in the treatment and teaching of children with learning differences. The focus of this presentation is to share an intervention strategy that has been used successfully at SPOTS, Special Programs in Occupational Therapy Services, an occupational therapy practice in Brooklyn and Manhattan, New York. This strategy, of storytelling can be adapted to all kinds of learning environments to help children who struggle with social marketing. That is the complicated process of social perspective taking that allows a child to initiate, gain and sustain relatedness and friendship with peers. It is this mutual reciprocity that allows the child to move from egocentric behavior into social citizenry that is so important in the day to day experiences of children at school. The community socialization process that occurs naturally as a part of the child's school years is often undervalued in its critical role in academic achievement. Current research has informed us that social skills are a significant predictor of future academic functioning and academic achievement (2012, Malecki, Kerres, Elliot).

Alarming, an increasing number of gifted young children and adolescents who excel in many academic subjects are burdened with communication, physical and social obstacles that to them are daunting (2010, Cole, Donahue; 2004 Gutman, McCreedy, Heisler). Though estimates of the extent of this problem remain stable between 6-10 percent, classrooms previously unaffected are growing. Reinforced is the decade ago estimate of 10 percent of children's non-verbal learning deficiencies being so severe that they typically experience daily and long term social rejection (1996 Duke, Nowicki, Martin). Such children can be identified through their excessive anger or jealousy, impulsivity, poor social skills and misreading of interpersonal cues. They might also exhibit difficulty making eye contact with others, obsessive-compulsiveness, an inability to share, hyper sensitivity to joking or clueless reactions to playful kidding as well as hypersensitivity to noise and touch or other sensory enriched experiences that typically abound in busy schools. These obstacles constitute an unending nightmare for such children. When one realizes that approximately 65% of communication requires accurate interpretation of nonverbal cues such as tone of voice, facial expression, posture and body language we better understand the pain and confusion these children suffer (1996, Duke, Nowicki, Martin). We know that the gaining of prosocial skills is critical. Prosocial skills, those engaging behaviors that make one socially desirable, are often listed as commercially available social curriculums. Skills like "greeting, introducing self, asking for help and answering questions or joining another in play

and sharing” are targeted and taught (2002, Williamson, Dorman). However, these bright children may master the mechanics; they cannot translate and sustain using the rules into playful, flexible interactive self and social regulation.

An antidote to this growing problem may be found in the healing power of simple story telling that is so much a part of most children’s formative years. Story telling can derive from books aimed at evoking discussions and interactions, such as the one developed at SPOTS, *The Dad & The Dog: Nera*. (2013, Mirabella, McCreedy). Or stories can be spontaneously created emphasizing and using the children’s experiences within real-time social experiences. No matter what story is used, the process is best when it is interactive, child directed and allows each child to plump the depth and intensity of their feelings without threat of suffering the negative consequences of exploring and expressing their emotions in a less structured social environment.(2013, Mirabella, McCreedy).

Children with sensory processing dysfunction may have learning disabilities and non-verbal learning challenges combined with diagnosis such as Aspersers’ syndrome, ADHD, Tourette’s syndrome, Obsessive-Compulsive Disorder and many other neurological conditions (2006, Miller). It has been increasingly more accepted that engagement in physical and social activity-based approaches to remediation of regulatory and social competency issues are more effective than participation in more traditional social problem-solving and instructional approaches.

Sensory processing refers to one’s ability to receive and interpret sensory information from one’s body or the environment and make adaptive responses. Adaptive responses include the ability to self-regulate behavioral responses to meet the activity demands in novel and familiar environments as well as to adjust one’s reactions to sensory, social and cognitive cues. The sensory systems include unconscious and conscious responses to apparent and hidden sensory receptors. These sensory systems include: tactile (touch), visual (eyes and eye muscle motility), auditory (hearing/vestibular responses, including movement and balance), proprioceptive (body position and reading body cues to move with precision) and praxis or motor planning (the ability to plan and execute coordinated movement). Sensory receptors reactions and capacities are quickly interpreted internally as emotional reactions as well. For example, within seconds of triggering sensation, responses can be emotionally experienced as joyful, fearful, calming, anxious, exciting and/or overwhelming.

It is not surprising that when a child is dysregulated or struggling with self-regulation that their capacity to access, describe and communicate their feelings about their personal experiences is so challenging and that expressing them to others in a secure and comfortable manner can be a seemingly insurmountable task for them.

Unfortunately, the instructional approach (a standard social curriculum to help all children negotiate social dilemmas) used by teachers, learning specialist and social workers in far too many schools, focuses on isolated skill training and most often than not does not result in

generalized positive behavior on the playground (2013, Crimmins, 2001, Gresham, Sugai, & Horner). It is unfortunate because it elevates the interest of maintaining a harmonious and successful classroom over the best interests of the children themselves. In particular, it does not address the individual crises of the bright but maladroit, socially awkward child who far too frequently is left to his or her own resources to make it through the day. These children suffer the individual crises of social behaviors that target them for the social ills of bullying and /or isolation.

To put it another way, many of the intervention techniques formulated to address the requirements of the child with learning differences comprise little more than cookie-cutter curriculum, a one-size-fits-all approach. (2002, Williamson & Dorman). As noted in other studies, the child knows the rules and often has a superior grasp of the mechanics and use of basic manners. However, implementing the social skills to fit in and comply with the rules of the social sandbox is another story (2004, Gutman, McCreedy, Heisler). In contrast, what is needed for these children is an activity-based, individualized intervention to meet the specific social challenges naturally occurring wherever children are taught to become effective citizens in their respective environments. This is especially true when addressing problems in social competence, such as self-regulation, communication and social decision making. Social competence, as a term used for this paper is derived from the Williamson/Dorman model. It is defined as developing a child's three foundational social-skill capacities for generalized successful engagement: cognitive, communicative and physical skills. Self-regulation dimensions of managing arousal, attention, physical control, flexibility and affect are addressed in activities that accompany the story-telling techniques. Communication skills of discourse, use of language, sending clear messages, taking turns, persuading others to listen to one's ideas and matching emotions to context and audience interests are practiced. Each story session helps the participants with social decision making such as noticing the social dynamic in the social group. A few of these social dynamics are: providing relevant social cues, correcting tangential options, making choices on activities or topics by popularity and interest in real time and evaluating the outcome of play and participation in real-time.

All students require a nurturing, comfortable and safe environment in which to express themselves, an environment where there are no wrong answers to questions about their thoughts, feeling and fears, only sincere responses that help them transition from a structured environment to less formal, more real-world surroundings, such as the playground, the cafeteria, the bus line, the theater or museum (1994, Friedberg). The child with learning differences needs a boost and most likely regular attendance in a specialized group opportunity that requires skilled planning and adult coaching. Many occupational therapists, teachers and learning specialist have found that the use of the child's unique interests, especially when employing literature as part of these group interventions, is a critical tool to help them make just such a transition to feeling confident to move in, join and leave the complex dance of social engagement (2013, Parham, Fazio).

By using story-book characters as proxies who confront the same types of obstacles they themselves encounter on a daily basis, children with learning difference can explore and discuss their most intimate emotions at a safe distance. Example .... Caregivers of all kinds – including teachers, occupational therapists and parents – can ask insightful questions about the stories to tap into natural experiences in a non-threatening manner and by doing so facilitate the teaching of critical social skills ( 2009, Sabes, Hacker). Finding story books that contain dilemmas that are relevant and specific to a particular group of children takes expertise. It is a skill worth developing. The book piloted at SPOTS, *The Dad and The Dog: Nera* , contains suggestions for discussions with children derived from questions arising from the story. The group leader using storytelling techniques must help plan restorative games, play activities, physical challenges, and the degree of structure and discussion topics based on the unique needs of the children present. The group goals, the gross motor activities, the degree of cooperation needed and the focus of the play should be designed with the child's age, developmental skill and social challenges specifically considered. Storytelling inherently facilitates improvement of listening, auditory memory, imagination and emotional interaction. Variations of its use abound.

Questions that come with their own formula-like answers are the equivalent of forcing the foot to fit the shoe. It is hard enough for children with learning differences to verbalize their feelings in socially acceptable ways. To force feed those conventionally acceptable solutions to what are extremely difficult problems adds yet another obstacle to how they view and react to the world. Instead, they should be given the opportunity to interpret the stories and answer questions about the characters in their own words and ways. Over time the children themselves will learn what inappropriate and appropriate behavior is. They experience the comfort of knowing others have similar feelings or challenges and expanded confidence with discussion of hard to talk about subjects. Storytelling in this way, following a child's lead, is essentially a restorative process and an excellent learning strategy (2013, Mirabella, McCreedy).

Is such a tailored approach expensive? Yes. Is it time-consuming? Certainly. But it's also far more effective than the imposition of a generalized solution to unique problems. Or to paraphrase a popular advertising slogan: The effort involved in doing so, considerable; the results, priceless.

Peter Mirabella and Paula McCreedy have published a short story, *The Dad & The Dog: Nera*, about the misadventures of a beloved rescue dog that has been used for several years in an activity-based storytelling program to help children between the ages of 7-9 years of age gain social competencies. This story and others served as reading for a pilot program for the publishing of the book and the preparation of this paper.

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## Flipping the Classroom: Creating a Blended Learning Environment

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## Flipping the Classroom: Creating a Blended Learning Environment

### Abstract

**Background:** Educators recognize that today's students are demanding a learning environment that provides tools for engagement and adds variety to the learning experience. Blended learning is the combination of traditional face-to-face classroom teaching methods with any of a variety of computer-mediated methods.

**Purpose:** The purpose of the study was to examine the effects of blended learning on student comprehension/achievement and self-efficacy and explore the effects of blended learning using lecture capture in a “flipped classroom” model.

**Objectives:** Study objectives included to evaluate the effects of a flipped classroom environment on student comprehension and self-efficacy.

**Methods:** Preliminary findings were from a convenience sample of 43 undergraduate senior nursing students. A lecture recording using personal lecture capture was provided to students via computer access prior to the class. Classroom time was devoted to reinforcing concepts using critical thinking challenges, discussions, and case studies to promote active learning and student engagement. Five sessions using the flipped classroom model were conducted. At the beginning and end of each flipped classroom session, a pre- and post-test of lesson content was administered to measure the effect of blended learning on content comprehension and achievement. Due to technical difficulties, only four sessions were used in the statistical analysis. At the beginning and end of the course, a self-efficacy questionnaire was administered to measure the effects of blended learning on self-efficacy.

**Results:** Post-tests were significantly higher than pretests for each flipped classroom session indicating increased comprehension and achievement. No significant difference was noted between pre- and post survey of student self-efficacy although a higher mean was obtained on the post survey.

**Conclusion:** The flipped classroom environment may increase comprehension and achievement in nursing students. The relationship of self-efficacy and blended learning needs to be further explored especially in regards to the flipped classroom environment. Additional research using lecture capture in a flipped classroom environment is needed.

## ***Connecting Theory and Application for Minority Students Through Motivation and Summer Research Initiative***

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**Key words:** Engineering, Education, Summer Research, Motivating, Minority

### **Abstract**

*Hostos Community College of the City University of New York “CUNY” has partnered with senior colleges in CUNY and the Goddard Institute of Space Studies “GISS” in New York City to expand the educational horizon of our students enabling them to compete and win in global markets. The latter is possible through collaborative research initiatives that develop and improve critical thinking and creativity skills, hands-on, team oriented, and interdisciplinary learning via collaborative research projects. Innovative educational programs must begin at an early stage of students’ education with the theoretical and practical applications needed to become front-runners in this competitive world. There is an imperative need to introduce students to a research environment where students can experience career relevance as a way to motivate them to keep pursuing these fields. Conducting research as part of internships with faculty members, students will be empowered to develop skills and will be motivated to succeed within STEM areas. Our summer Internship Initiative aims to narrow the gap between theory and application by making the theory relevant to existing research projects making the learning process exciting and interactive for students, thus increasing retention in the STEM areas.*

*This project has been supported by a grant from the United States Department of Education (US DoE -CILES #P031C110158).*

**Introduction:** So what is “motivation”? In the Wikipedia dictionary, it defined motivation in the following way (wikipedia, 2010):

*“Motivation is a psychological feature that arouses an organism to act towards a desired goal and elicits, controls, and sustains certain goal-directed behaviors. It can be considered a driving force; a psychological one that compels or reinforces an action toward a desired goal. For example, hunger is a motivation that elicits a desire to eat. Motivation is the purpose or psychological cause of an action.”*

How important is the motivation? The literature is filled with the answers and we will not discuss this in detail since it is not the purpose of the current article. We will simply mention one instance by Ormond (Ormond, 2003) where some key reasons of motivation were listed which includes:

- Provide direction
- Increased energy and overall effort
- Increased initiative and drive
- Enhanced cognitive processing abilities
- Highlight reinforcing consequences
- Overall improved performance

All of the above criteria are extremely important for all students but in particular for students majoring in STEM education. We need to motivate our engineering students so they can be successful in their student’s life. But as we see, motivating, by nature, is not an easy task and when it comes to STEM education, this becomes an even more difficult job. On top of this, the group of students that we are working on are in most part full time worker and have family responsibility. Most of them are minority students and thus have many other social, economical, and political problems in their personal and professional life. Especially students in the evening classes, after a long day of work, cannot concentrate in the class and even if they understand the lecture, it is difficult for them to retain the knowledge and manipulate it in the future (especially during an exam). In fact, one student from our calculus I class made the following comment:

*“It is really difficult for me to keep my eyes open and keeping concentration after the first 20 minutes of the lecture is almost impossible for me. Gradually, as the semester goes on, the classroom becomes my bedroom.”*

The comment above is aligned well with actual finding. McKeachie (McKeachie, 1994) pointed out the following:

*In a typical 50-minute lecture class, students retain 70% of what is conveyed in the first 10 minutes but only 20% from the last 10 minutes. If we really want to get our message across, we need to orchestrate “the material” in a multi-faceted way across the range of student learning style.*

At this point a short description of our college is necessary to understand our student's body. The City University of New York (CUNY) is a leading urban public university serving more than 480,000 students with 23 campuses in New York City. CUNY has a diverse body of students, like most urban universities in the US. Hostos Community College (HCC) is the smallest campus within the CUNY system with more than 6,000 students. HCC is located at the heart of the South Bronx and takes pride in its historical role in educating students from diverse ethnic, racial, cultural and linguistic backgrounds, particularly Hispanics and African Americans. Hostos community college is a "Hispanic Serving Institution (HSI)". Usually, in a typical class, 60% of the students are Hispanic, 30% are Black and 10% are other ethnicity. So how to teach such a diverse body of students?

A single method of teaching cannot be appropriate for all the students. Susan and Linda (Susan & Linda, 1998) described this fact as follows:

*By now it is axiomatic to point out that student bodies are increasingly diverse, not only in terms of ethnicity and gender, but also in terms of age, nationality, cultural background, etc. This diversity can affect classroom settings in many ways, including the diversity of learning styles.*

It is also pointed out that African-American and Mexican-American students are more likely to prefer working with others to achieve common goals (Banks, 1988). It is also known in the literature that the metaphor of dialogue is more appropriate in that it emphasizes the interactive, cooperative, relational aspects of teaching and learning (Tiberius, 1986).

So we need to rethink our traditional way of teaching where students are thought of as an empty bag and we fill them up with as much knowledge as quickly as possible. On the other hand, we also need to think about how much of this knowledge is in fact retained by our students for the long run.

How can we motivate and encourage such groups of students? The answer is not simple, of course. In this article, we describe how hand on experience side by side with theory is helpful for students to stay focused. This is not a secret at all and it is well known throughout literature that application of theory motivate students in many ways. Since we have been charged with preparing a well-trained student population in the STEM fields to meet many challenges and stay competitive in the global markets, we need to rethink the way we traditionally teach our students. This is even more true for a "Hispanic Serving Institution" where majority of the students belong to minority groups.

Consequently, innovative educational programs must begin at an early stage of students' education with the theoretical and practical applications needed to become front-runners in this competitive world. There is an imperative need to introduce students to a research environment where students can experience career relevance as a way to motivate them to keep pursuing these fields. By conducting research as part of internships with faculty members, students will be empowered to develop skills and will be motivated to succeed within STEM areas (Bailey & Alfonso, 2005). Therefore, the Summer Internship Initiative will narrow the gap between theory

and application by making the theory relevant to existing research projects making the learning process exciting and interactive for students, thus increasing retention in the STEM areas (Engle & Tinto, 2008).

We will give an example right way. In a lecture of calculus I, for the topic of optimization, we bring cardboards, scissors, bowls and water to demonstrate some of the optimization problems. One such problem is to find out the size of the square that needs to be cut out from each corner of a given cardboard so that the box made out from this process has the maximum volume. All students were given cardboards and scissors and they all had hands on demonstration of the problem. It seems that majority of the students understand the problem right away and quite a few numbers of them already knew how to attack the problem. This was an eye opening experience for us as a teacher. Couple of students actually came to us and said

*“This is probably the first class in the semester where they did not fall asleep. Why not every class be like this one?”*

As a teacher, we have the responsibility to “finish the syllabus” – whatever that means. Since majority of the students are engineering students, they need to take all the calculus sequence (from calculus I to calculus IV). Thus it is important for us to finish the syllabus for calculus I. So there is always a struggle between finishing the syllabus on time and doing hands on experience in class which takes time and effort both in instructors and students part. So we need to choose a middle path.

The summer research presented us with a new opportunity. In the summer research we do not have the pressure of finishing any syllabus and we can work more freely and independently. Of course, on the flip side of the coin, we can only reach a very limited number of students in such a way. But the students that we were reached have a long term, fruitful motivation to continue in their STEM field. Whatever the students were learning in theory in the spring term, they are given hands on experience in this summer research initiative. A few examples of connection between topics in theory and experiment in the summer research are given the following table.

Theory in the spring term	Corresponding research topic in the summer research initiative
Matrix multiplication (linear algebra)	Image compression
Geometry of 2D (college algebra)	Image processing
Optimization and derivative (calculus)	Application in industry (maximizing profit, workers input etc.)
Heat equation (differential equation)	Hand on experience with heat equation with computer model
Integral calculus (calculus II and III)	Use of “Mathematics” software to solve real life problems in integral calculus.

For this kind of summer research initiative, we need collaboration from different colleges and agencies. In fact, Hostos Community College of CUNY has partnered with senior colleges in CUNY and the Goddard Institute of Space Studies “GISS” in New York City to expand the educational horizon of our students enabling them to compete and win in global markets. The latter is possible through collaborative research initiatives that develop and improve critical thinking and creativity skills, hands-on, team oriented, and interdisciplinary learning via collaborative research projects.

The major goal of this summer research initiative is to introduce minority engineering students to a research environment in a team setting. For Hostos Community College team, for the summer of 2012 and 2013 we have two undergraduate students, two high school students, two high school teachers and one faculty member directing the whole team. This is an ongoing project and as time goes on, we will be able to reach more and more students.

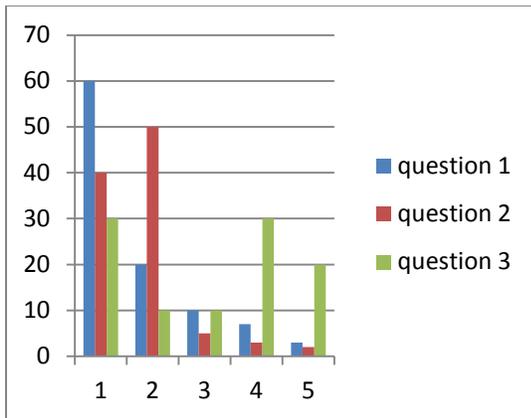
Some of the hands on experience that was done in the summer research were included the following:

1. Students took digital photo of various kinds and plot the graph of how much space each photo takes when saving in the computer. They compare different places the photos were taken vs. different time of the day.
2. Use different kinds of image compression technique including “singular value decomposition”, JPEG compression, JPEG 2000 compression and compare this with each other. They use “Mathematica” software for this project.
3. Create a computerize picture from a given set of data which gives them the range of RGB (red, green and blue) values.
4. Attend different seminars and museums including American museum of natural history.
5. The end result of the project is presented at a research summit in NASA and also a showcase presentation in the City College of New York.
6. A research paper is also written by all the members of the team and in some instances submitted in various journals for possible publication.

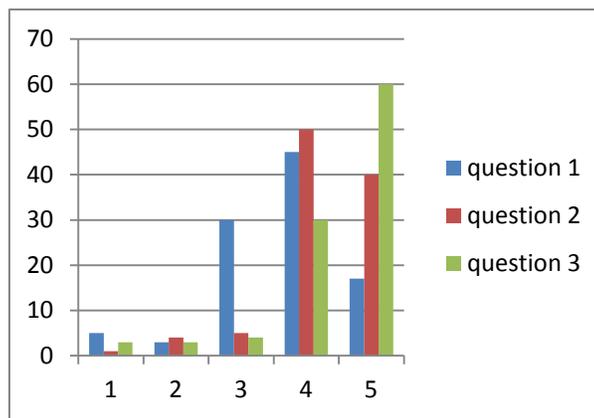
Before and after each summer research, we conduct a very brief survey to analyze how they think about the STEM program and how the summer research influence their decision. To make it simple, we only asked the following three statements measured in the scale of 1 to 5 (5=strongly agree, 4=agree, 3=neither agree nor disagree, 2=disagree, 1=strongly disagree)

1. I will do very well in my career in the STEM field.
2. I really like my subject and want to study further and get a graduate degree.
3. I will encourage my siblings to pursue a STEM career.

A bar graph of both before and after the summer research is given below where all the data are given in percentages:



Before Summer Research



After Summer Research

Here, in the horizontal axis is the scale of the response which is between 1 to 5 and in the vertical axis, the percentage of the students who select the corresponding response is given. So for example, before the summer research, only about 5% of the students agree that they will pursue a graduate degree in the STEM field while after the summer research, this number increase to 50%. This is a dramatic change. In general, we see from the bar graph above that the concentration of the students before the summer research is between the responses 1 to 3 and there is an obvious shift toward the responses 4 to 5 after the summer research. Although the sample size is not big enough to make a general remark, we do see the effect of summer research on our STEM minority students.

This research initiative not only motivated undergraduate students but also encourage high school students to choose engineering as their future major. At the same time, the knowledge and experience of team effort can be carried to a classroom by high school teachers. This is a win-win situation for all the members of the team.

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## Submission

1. **Title of Submission: *Education for Ecological Civilization: a Perspective Based on Alfred North Whitehead's Notion of Physical Prehending (feelings)***
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**submission ID. 1044**

## 6. Abstract

The basis of democracy is the common fact of value-experience, as constituting the essential nature of each pulsation of actuality. Everything has some value for itself, for others, and for the whole. This characterizes the meaning of actuality. (AN Whitehead in Modes of Thought)

**In his work, Alfred North Whitehead understands that the vibrancy of civilizations require ongoing renewal through the reformulation of ideals which lure human cultures into richer possibilities. In the absence of such renewal, including in the current period of mass environmental destruction, civilizations can decay and possibilities for renewal diminish. Whitehead also criticizes how modernist notions of knowledge, value and learning are trapped in assumptions which limit learning because they fail to understand the physical in human value-experience; and he sees the separation of the body from recognition of worth in value-experience based on metaphysical assumptions in western civilization as at the basis of an ecological bifurcation. From the perspective of this Whiteheadian analysis, ecological understanding requires physical, non-cognitive prehending that does not separate value from fact but is the basis of value-experience.**

**Can the notion of an ecological democracy that recognizes the actualization of value-experiences in all things provide the conceptual bases of education for ecological civilization? On what bases might educational systems construct learning processes to advance an ecologically based civilization. This presentation recommends a reconceptualization of the foundations of human learning including through physical prehending (bodily feelings) within Whitehead's process philosophy and from which such ideals and education approaches to advance vibrant ecological civilizations can be re-imagined**

This work anticipates the Tenth International Whitehead Conference, to be held June 4-7 in Claremont, California 2015 titled SEIZING AN ALTERNATIVE: TOWARD AN ECOLOGICAL CIVILIZATION

Proceeding submission for the 12<sup>th</sup> annual Hawai International Conference on Education.

1. Title of Submission: **Doodling and Learning in Schools: Examples and Possibilities**
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submission ID: "1361" and "1044"
6. Abstract

Although it is associated with dawdling and may be viewed as a means to escape learning, doodling may in fact have the potential to support learning. What are some possible relationships, therefore, between doodling and learning? The argument against doodling as an educational vehicle is that it may be too unstructured and too unreflective to give shape to learning processes or events. However, it may be that doodling can provide access to some unreflected apprehensions or feeling through which to support the generation of creative thinking and analysis.

The first presentation in this session called ***Doodling to Teach and Learn: Celebration of a Career*** is a multimedia presentation by a teacher from Saskatchewan, Canada who explores her 30 years of experiences integrating doodling across the curriculum from grades one to 12. This expose' will recommend the use of doodling as a creative approach to assist teachers inspire and communicate with students and to provide students the means to appreciate, reflect, upon and think through possibilities in their learning.

The second presentation, called ***the Basis of Learning Possibilities in Doodling: Whiteheadian Considerations***, analyses the possibilities of creativity in doodling as learning viewed from the perspective of the work of Alfred North Whitehead who provides a framework for thinking of human experience in terms of feelings as non-cognitive apprehending. From the perspective of five distinct kinds of such feelings including physical feelings,

conceptual feelings, transmuted feelings, propositional feelings and intellectual feelings, this presentation examines how doodling may support learning access to non-cognitive “prehensions” of possibility and assessments of what might be worthwhile and mediated into productive educational relations.

# **Impact of Science and Technology Professional Development Programs on Integration Levels and STEM Dispositions of Middle School Teachers**

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## **Introduction**

The Hawaii FIRST (Fostering Inspiration & Relevance through Science & Technology) Pre-Academy program is supported by Act 111 of the Hawaii State Legislature to provide a variety of science and technology middle school program enhancements throughout the State of Hawaii. Data were requested from teachers at the 51 Hawaii middle schools involved in the project. Data were gathered from 202 teachers in spring 2011, 147 teachers in spring 2012 and 134 in spring 2013 for the Hawaii FIRST project. Teachers from forty different schools submitted data. This paper focuses on the trends in the measured indices over time as well as differences between whether or not teachers participated in the project and the impact of the different activities.

## **Overview of Activities and Outcomes**

The Hawaii FIRST Project offered middle school teachers statewide a wide range of activities from which educators could select one or more. Activities analyzed were:

- Taking part in Research Experiences for Teachers
- Taking part in Workshops
- Taking part in Energy Monitoring Activities

- Taking part in Digital Fabrication Activities
- Taking part in Water Quality Activities

## **Instrumentation**

The surveys administered to Hawaii FIRST teachers contained questions about participant activities, perceptions of the impact of the Hawaii FIRST program, and attitudes toward science, technology, engineering, mathematics as well as STEM careers. The STEM Semantics Survey is the primary instrument used to assess general perceptions of STEM disciplines and careers using Semantic Differential adjective pairs from Osgood's (1962) evaluation dimension. This survey was created by adapting Knezek and Christensen's (1998) Teacher's Attitudes Toward Information Technology Questionnaire (TAT), which was itself derived from earlier Semantic Differential research by Zaichkowsky (1985).

The five most consistent adjective pairs of the ten used on the TAT were incorporated as descriptors for target statements reflecting perceptions of STEM subjects. A fifth scale representing interest in a career in STEM was also created. Each of five scales consisted of a target statement such as "To me, science is:" followed by five polar adjective pairs spanning a range of seven choices. For example, "To me, science is: exciting \_ \_ \_ \_ \_ \_ \_ \_ unexciting." Internal consistency reliabilities for middle school student perceptions of science, math, engineering, technology, and STEM as a career ranged from alpha = .85 to alpha = .95 for the 2013 subjects. These numbers are in the range of "very good" to "excellent" according to guidelines provided by DeVellis (1991).

Three measures of technology integration were included in the survey items. Stages of Adoption of Technology (Christensen, 1997), the Concern's-Based Adoption Model Level of Use (CBAM-LoU) (Griffin & Christensen, 1999), and the Apple Classrooms of Tomorrow (ACOT) teacher stages instrument (Dwyer, Ringstaff, & Sandholtz, 1991). Hancock, Knezek, and Christensen (2007) found that these three single-item instruments, taken together, produce a Technology Integration scale with an internal consistency reliability of Alpha = .84 for a typical set of preservice or inservice teachers.

In addition, two questions were added to the survey by the project personnel to determine whether the respondents believed that participation in this program increased teacher retention. The first question (coded Tools 1) asked about the retention of teachers in the schools in general. The second question (coded Tools 2) was more personal regarding whether they believed this program made them more inclined to remain in teaching.

## **Longitudinal Trends**

Trends in the three years of data gathered in the spring of each of the years, 2011, 2012 and 2013, are shown in Table 1. While the changes have a small effect size of <.2, stages of adoption of technology, and semantic perception of science, mathematics, and engineering trended upward to more positive while CBAM Levels of Use and semantic perception of technology trended downward. It is possible that the downward trends were due to a reduction in funds for the most recent year.

Table 1

*Means and Standard Deviations for Technology Integration and STEM Disposition Measures*

Measurement Indices	Spring 2011			Spring 2012			Spring 2013		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
CBAM Levels of Use	202	5.34	1.73	147	5.33	1.73	134	5.18	1.98
Stages	201	4.79	1.23	147	4.94	1.05	134	4.96	1.15
ACOT	201	3.60	.97	147	3.52	.98	134	3.62	.94
Science Total	20	6.31	.95	147	6.20	1.16	134	6.41	.95
Mathematics Total	201	5.36	1.23	146	5.40	1.36	134	5.47	1.35
Engineering Total	198	5.62	1.17	145	5.56	1.11	133	5.71	1.08
Technology Total	196	6.34	.87	146	6.26	.99	133	6.10	1.04
Career Total	200	6.18	1.04	146	6.14	1.07	134	6.19	1.06
STEM Total	184	5.97	.76	147	5.91	.80	134	5.98	.83

**Benefits of Participating in the Program**

The teachers were categorized by whether or not they had previously participated in the Hawaii FIRST initiative. There were three technology integration measures and six attitudinal measures related to STEM. As shown in Table 2, those who participated in the program were significantly higher on Stages of Adoption of Technology and ACOT Teacher Stages. They were not significantly higher on CBAM LoU. However, the effect size for CBAM LoU is .96 which is large according to guidelines by Cohen (1988), and which is considered to be of sufficient magnitude to be educationally meaningful (Bialo & Sivin-Kachala, 1996).

Regarding the STEM Semantic measures, three out of six were significantly ( $p < .05$ ) higher for the teachers participating in the program. A Cohen's  $d$  effect size was calculated on each of the measures with the average effect size found to be  $ES = .46$ . This surpasses the  $ES = .3$  criterion for the point at which the magnitude of an effect becomes educationally meaningful (Bialo & Sivin-Kachala, 1996).

All of the eight measures were higher for those who participated in the project. This is very unlikely to have happened by chance (binomial probability = .008). This indicates that teachers who participated in the project have higher STEM dispositions and also higher level of technology integration, than their peers who did not participate in this activity.

Table 2

*Oneway analysis of variance for indicators for those who are part of Hawaii FIRST versus those who are not part of the program*

		N	Mean	Std. Dev.	Sig.	Effect Size
CBAM LoU	Did not participate	9	4.44	1.81		
	Participated	125	5.23	1.99		
	Total	134	5.18	1.98	.126	.96
Stages	Did not participate	9	4.00	1.23		
	Participated	125	5.03	1.12		
	Total	134	4.96	1.15	.005	.88
ACOT	Did not participate	9	2.78	1.30		
	Participated	124	3.68	.88		
	Total	133	3.62	.94	.003	.81
Science Total	Did not participate	9	5.95	1.77		
	Participated	125	6.45	.86		
	Total	134	6.41	.95	.065	.36
Mathematics Total	Did not participate	9	5.07	1.87		
	Participated	125	5.50	1.31		
	Total	134	5.47	1.35	.176	.27
Engineering Total	Did not participate	9	5.07	1.15		
	Participated	124	5.76	1.07		
	Total	133	5.71	1.08	.032	.62
Technology Total	Did not participate	9	5.89	1.15		
	Participated	124	6.12	1.04		
	Total	133	6.10	1.04	.265	.21
Career Total	Did not participate	9	5.27	1.59		
	Participated	125	6.25	.99		
	Total	134	6.19	1.06	.004	.74
STEM Total	Did not participate	9	5.46	1.07		
	Participated	125	6.01	.80		
	Total	134	5.98	.83	.026	.58
Tools1	Did not participate	9	4.11	1.06		
	Participated	125	4.27	.92		
	Total	134	4.26	.93	.308	.16
Tools2	Did not participate	9	3.44	1.13		
	Participated	125	4.15	.95		
	Total	134	4.10	.98	.018	.68

Analysis of variance was conducted related to whether or not they had attended each of the program activities. It was expected that those who attended these activities would have higher dispositions toward the content areas covered in these activities, and therefore a one-tailed test of significance was used. Overall findings indicated only one significant finding for the Research Experience for Teachers with ACOT being significantly higher ( $p=.035$ ) for those who attended the Research activity (Table 3). As shown in Table 4, both ACOT ( $p=.018$ ) and Engineering ( $p=.027$ ) were higher for those who attended project workshops. For the Energy program, both Science ( $p=.042$ ) and Engineering ( $p=.0005$ ) were significantly higher than those who did not attend this program (Table 5). As shown in Table 6, there were no significant differences for the Digital Fabrication program. For the Water Activity (aquaponics, etc.) two of the technology integration measures, Stages ( $p=.037$ ) and ACOT ( $p=.022$ ), were significantly higher for those who attended (Table 7).

Table 3  
*Oneway ANOVA by Whether or Not Respondents Attended the Research Experiences for Teachers Program*

Indicator	Attendance	N	Mean	Std. Dev.	Sig.
CBAM-LoU	Did Not Attend	91	5.12	1.86	
	Attended	43	5.30	2.23	
	Total	134	5.18	1.98	.622
Stages	Did Not Attend	91	4.86	1.20	
	Attended	43	5.19	1.03	
	Total	134	4.96	1.15	.124
ACOT	Did Not Attend	91	3.52	.90	
	Attended	42	3.83	.99	
	Total	133	3.62	.94	.069
Science Total	Did Not Attend	91	6.41	.95	
	Attended	43	6.43	.95	
	Total	134	6.41	.95	.912
Mathematics Total	Did Not Attend	91	5.54	1.25	
	Attended	43	5.32	1.54	
	Total	134	5.47	1.35	.374
Engineering Total	Did Not Attend	91	5.71	1.03	
	Attended	42	5.71	1.20	
	Total	133	5.71	1.08	.995
Technology Total	Did Not Attend	91	6.10	1.03	
	Attended	42	6.10	1.07	
	Total	133	6.10	1.04	.967
Career Total	Did Not Attend	91	6.29	.95	
	Attended	43	5.96	1.25	
	Total	134	6.19	1.06	.095

STEM Total	Did Not Attend	91	6.01	.77	
	Attended	43	5.90	.95	
	Total	134	5.98	.83	.482
Tools 1	Did Not Attend	91	4.25	.96	
	Attended	43	4.28	.85	
	Total	134	4.26	.93	.878
Tools 2	Did Not Attend	91	4.04	.99	
	Attended	43	4.23	.95	
	Total	134	4.10	.98	.298

Table 4

*Oneway ANOVA by Whether or Not Respondents Attended the Workshops Program*

		N	Mean	Std. Dev.	Sig.
CBAM-LoU	Did Not Attend	62	5.08	1.77	
	Attended	72	5.26	2.16	
	Total	134	5.18	1.98	.595
Stages	Did Not Attend	62	4.90	1.22	
	Attended	72	5.01	1.09	
	Total	134	4.96	1.15	.582
ACOT	Did Not Attend	62	3.44	.99	
	Attended	71	3.77	.87	
	Total	133	3.62	.94	.036
Science Total	Did Not Attend	62	6.36	1.01	
	Attended	72	6.46	.89	
	Total	134	6.41	.95	.558
Mathematics Total	Did Not Attend	62	5.49	1.25	
	Attended	72	5.46	1.43	
	Total	134	5.47	1.35	.897
Engineering Total	Did Not Attend	62	5.52	1.12	
	Attended	71	5.88	1.03	
	Total	133	5.71	1.08	.053
Technology Total	Did Not Attend	62	6.00	1.08	
	Attended	71	6.19	1.01	
	Total	133	6.10	1.04	.300
Career Total	Did Not Attend	62	6.17	1.06	
	Attended	72	6.20	1.07	
	Total	134	6.19	1.06	.861
STEM Total	Did Not Attend	62	5.91	.83	

	Attended	72	6.04	.83	
	Total	134	5.98	.83	.371
Tools 1	Did Not Attend	62	4.21	.93	
	Attended	72	4.31	.93	
	Total	134	4.26	.93	.552
Tools 2	Did Not Attend	62	3.97	.98	
	Attended	72	4.22	.97	
	Total	134	4.10	.98	.133

Table 5  
*Oneway ANOVA by Whether or Not Respondents Attended the Energy Program*

	Attendance	N	Mean	Std. Dev.	Sig.
CBAM-LoU	Did Not Attend	112	5.14	1.99	
	Attended	22	5.36	1.97	
	Total	134	5.18	1.98	.634
Stages	Did Not Attend	112	5.01	1.14	
	Attended	22	4.73	1.24	
	Total	134	4.96	1.15	.297
ACOT	Did Not Attend	111	3.58	.96	
	Attended	22	3.82	.80	
	Total	133	3.62	.94	.270
Science Total	Did Not Attend	112	6.35	.99	
	Attended	22	6.73	.53	
	Total	134	6.41	.95	.083
Mathematics Total	Did Not Attend	112	5.49	1.34	
	Attended	22	5.37	1.41	
	Total	134	5.47	1.35	.706
Engineering Total	Did Not Attend	111	5.61	1.11	
	Attended	22	6.26	.75	
	Total	133	5.71	1.08	.009
Technology Total	Did Not Attend	111	6.03	1.07	
	Attended	22	6.45	.80	
	Total	133	6.10	1.04	.090
Career Total	Did Not Attend	112	6.15	1.06	
	Attended	22	6.37	1.06	
	Total	134	6.19	1.06	.365
STEM Total	Did Not Attend	112	5.93	.86	
	Attended	22	6.24	.60	
	Total	134	5.98	.83	.107

Tools 1	Did Not Attend	112	4.22	.92	
	Attended	22	4.45	.96	
	Total	134	4.26	.93	.285
Tools 2	Did Not Attend	112	4.07	.97	
	Attended	22	4.27	1.03	
	Total	134	4.10	.98	.378

Table 6

*Oneway ANOVA by Whether or Not Respondents Attended the Digital Fabrication Program*

	Attendance	N	Mean	Std. Dev.	Sig.
CBAM-LoU	Did Not Attend	107	5.13	1.98	
	Attended	27	5.37	2.02	
	Total	134	5.18	1.98	.579
Stages	Did Not Attend	107	4.97	1.19	
	Attended	27	4.93	1.04	
	Total	134	4.96	1.15	.854
ACOT	Did Not Attend	107	3.59	.96	
	Attended	26	3.73	.83	
	Total	133	3.62	.94	.490
Science Total	Did Not Attend	107	6.44	.92	
	Attended	27	6.31	1.05	
	Total	134	6.41	.95	.536
Mathematics Total	Did Not Attend	107	5.44	1.34	
	Attended	27	5.60	1.42	
	Total	134	5.47	1.35	.584
Engineering Total	Did Not Attend	107	5.66	1.09	
	Attended	26	5.92	1.05	
	Total	133	5.71	1.08	.274
Technology Total	Did Not Attend	107	6.09	1.06	
	Attended	26	6.14	.97	
	Total	133	6.10	1.04	.838
Career Total	Did Not Attend	107	6.19	1.05	
	Attended	27	6.15	1.13	
	Total	134	6.19	1.06	.840
STEM Total	Did Not Attend	107	5.97	.83	
	Attended	27	6.02	.85	
	Total	134	5.98	.83	.752
Tools 1	Did Not Attend	107	4.29	.91	

	Attended	27	4.15	.99	
	Total	134	4.26	.93	.479
Tools 2	Did Not Attend	107	4.10	.97	
	Attended	27	4.11	1.01	
	Total	134	4.10	.98	.969

Table 7

*Oneway ANOVA by Whether or Not Respondents Attended the Water Activities Program*

	Attendance	N	Mean	Std. Dev.	Sig.
CBAM-LoU	Did Not Attend	102	5.04	1.91	
	Attended	32	5.63	2.17	
	Total	134	5.18	1.98	.145
Stages	Did Not Attend	102	4.86	1.20	
	Attended	32	5.28	.92	
	Total	134	4.96	1.15	.073
ACOT	Did Not Attend	101	3.52	.96	
	Attended	32	3.91	.82	
	Total	133	3.62	.94	.044
Science Total	Did Not Attend	102	6.40	.96	
	Attended	32	6.47	.91	
	Total	134	6.41	.95	.716
Mathematics Total	Did Not Attend	102	5.53	1.32	
	Attended	32	5.28	1.45	
	Total	134	5.47	1.35	.345
Engineering Total	Did Not Attend	101	5.63	1.08	
	Attended	32	5.99	1.05	
	Total	133	5.71	1.08	.102
Technology Total	Did Not Attend	101	6.08	1.03	
	Attended	32	6.18	1.10	
	Total	133	6.10	1.04	.618
Career Total	Did Not Attend	102	6.24	.98	
	Attended	32	6.02	1.29	
	Total	134	6.19	1.06	.310
STEM Total	Did Not Attend	102	5.97	.81	
	Attended	32	5.99	.90	
	Total	134	5.98	.83	.950
Tools 1	Did Not Attend	102	4.25	.91	
	Attended	32	4.31	.99	

	Total	134	4.26	.93	.721
Tools 2	Did Not Attend	102	4.07	.96	
	Attended	32	4.22	1.04	
	Total	134	4.10	.98	.450

### Correlations with Retention Indices

The Tools items and STEM scales were correlated with each other to determine the strength of their relationships. Tools 1 assessed whether teachers believed the Hawaii FIRST Program activities helped retain teachers in general throughout the state, while Tools 2 asked whether the teacher completing the survey felt the Hawaii FIRST activities helped keep them personally interested in staying in the teaching profession. As shown in Table 8, Tools 1 was significantly ( $p=.01$ ) positively correlated with all scales on the STEM Semantic. Tools 2 was significantly ( $p=.01$ ) positively correlated with all but the Science scale. The Science scale was also significantly correlated with Tools 2, but at the less significant  $p=.05$  level. Since the results presented in the previous section demonstrated that teachers who took part in Hawaii FIRST activities had higher dispositions than those who were not in the program, and since findings of the current section demonstrate that higher dispositions are associated with greater belief that the activities help retain teachers, then we can infer that participation in Hawaii FIRST activities leads to greater belief that these activities help retain teachers.

Table 8  
*Correlation Coefficients for Tools with the STEM Semantic Measures*

		tools1	tools2	Sci Tot	Math Tot	Eng Tot	Career Tot	STEM Tot	Tech Tot
tools1	Pearson Correlation	1	.661**	.232**	.289**	.283**	.311**	.368**	.267**
	Sig. (2-tailed)		.000	.007	.001	.001	.000	.000	.002
	N	134	134	134	134	133	134	134	133
tools2	Pearson Correlation	.661**	1	.203*	.438**	.301**	.364**	.435**	.294**
	Sig. (2-tailed)	.000		.019	.000	.000	.000	.000	.001
	N	134	134	134	134	133	134	134	133
SciTot	Pearson Correlation	.232**	.203*	1	.309**	.509**	.561**	.685**	.344**
	Sig. (2-tailed)	.007	.019		.000	.000	.000	.000	.000
	N	134	134	134	134	133	134	134	133
MathTot	Pearson Correlation	.289**	.438**	.309**	1	.403**	.505**	.699**	.281**
	Sig. (2-tailed)	.001	.000	.000		.000	.000	.000	.001
	N	134	134	134	134	133	134	134	133

EngTot	Pearson	.283**	.301**	.509**	.403**	1	.625**	.811**	.573**
	Correlation								
	Sig. (2-tailed)	.001	.000	.000	.000		.000	.000	.000
	N	133	133	133	133	133	133	133	133
CareerTot	Pearson	.311**	.364**	.561**	.505**	.625**	1	.869**	.634**
	Correlation								
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.000
	N	134	134	134	134	133	134	134	133
STEMTot	Pearson	.368**	.435**	.685**	.699**	.811**	.869**	1	.732**
	Correlation								
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000
	N	134	134	134	134	133	134	134	133
TechTot	Pearson	.267**	.294**	.344**	.281**	.573**	.634**	.732**	1
	Correlation								
	Sig. (2-tailed)	.002	.001	.000	.001	.000	.000	.000	
	N	133	133	133	133	133	133	133	133

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

## Discussion

The first year (2010-11) there were more funds for the project which is reflected in the number of teachers still in the project three years later versus the size of the groups joining in 2011 (two years in project) and 2012 (one year in the project). It is likely the lack of access in the third year is reflected in the lower reported CBAM Levels of Use. Regarding gender differences in the third year data (2013), the males tended to be higher on eight out of nine attitudinal measures (binomial  $p < .04$ ). This was not true in the previous year when females and males were equally balanced with females being higher on half of the items and males being higher on the other half of the indicators.

## Conclusion

STEM dispositions have remained relatively consistent across three years of the Hawaii FIRST project. There appears to be a slight downward trend in the Concerns-Based Adoption Model Level of Use (CBAM LoU) indicator, which we attribute to reduced funding during the past two years of the program, contrary to the first year when federal stimulus funds were received to start the program. Dispositions among those who took part in specific workshop activities tended to be higher on relevant measures for those who participated than for those who did not. Similarly, group means for STEM dispositions and technology integration measures across those who participated in programs were significantly higher ( $p < .05$ ) than for those who did not. STEM dispositions for those who took part in the Hawaii FIRST activities tended to be positively correlated ( $p < .05$ ) with stronger belief that these activities help retain teachers in general, and also specifically help retain the person completing the survey.

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# **The Role of the Teacher in Influencing Student Outcomes in Secondary School**

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# **The Role of the Teacher in Influencing Student Outcomes in Secondary School**

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*Abstract: The cultural-social theory of cognitive development identifies the importance of social relationships in successful cognitive development and academic achievement in children. This study has continued previous research in a tertiary bridging program at a regional university and examines the role that poor student-teacher relationships had in acting as a barrier to successful academic achievement in secondary school. The major contributors to the poor student-teacher relationships were identified as the perception of a lack of care and support from teachers and differential teacher behaviour based upon the teachers' perception of student academic ability. The impact of these poor relationships resulted in a lower level of academic engagement, ability to cope with the curriculum complexity and academic achievement. The implications in terms of the current standards for Australian teachers is discussed.*

## **Introduction**

This study continues research that has been conducted at a regional university in Queensland, Australia in relation to students enrolled in a tertiary bridging program. The program is conducted on-campus and is normally completed in one full-time semester. About 50% of students are between the ages of 18 to 22 years of age at the time of enrolment. Only 10% of the students in this age group are academically qualified for tertiary study while 41.2% failed to successfully complete secondary school. These statistics indicate that a substantial number of students who have experienced poor outcomes and demonstrated limited academic engagement in secondary school, have attempted to continue on to tertiary study within five years of leaving secondary school.

Previous research (Whannell, Allen, & Lynch, 2010; Whannell & Allen, 2011) targeting these students has established that the nature of the student-teacher relationships which existed during the last 2 years of secondary schooling were of a poor quality when compared to that of

family and peers. The poor quality of the student-teacher relationships were identified as one possible explanation for the poor academic outcomes for these students during their secondary schooling. This report presents findings from an examination of the qualitative data relating to student-teacher relationships and identifies specific causes for their poor quality.

## **Theoretical Context**

The cultural-social (Bandura, 1989; Bruner, 1964; Vygotsky, 1960) and bioecological (Bronfenbrenner, 1986; Bronfenbrenner & Ceci, 1994) theories of cognitive development hypothesise that the process of cognitive development is dependent upon an appropriate cultural and social context before cognitive development may occur at an optimal rate. While these theories provide robust support for role that social relationships have in terms of the quality of academic outcomes, they do not describe, in-depth, the reasons why teacher-student relationships may be dysfunctional. This review of the academic literature has attempted to identify common themes as to why dysfunctional social relationships may exist between students and teachers at the secondary school level.

Vygotsky argued that “higher mental functions appear first on the ‘interpersonal’ (i.e. social) plane and only later on the ‘intrapsychological’ (i.e. individual) plane” (Wertsch, 1979). This view presents learning and cognitive development as being constructed initially as a result of social interaction between people. The proposal is that learning and cognitive development are understood in the first instance as a social construct, before being internalised to become a personal construct.

Bandura (1989) proposed that “behaviour, cognition and other personal factors, and environmental influences all operate as interacting determinants that influence each other bidirectionally” (p. 2). The conditions for cognitive development were identified as a result of influences at both the individual and the social level. The individual’s “expectations, beliefs, self-perceptions, goals and intentions” were identified as giving “shape and direction to behaviour” whereas the relation between the individual and the social context was identified as “human expectations, beliefs, emotional bents and cognitive competencies are developed and modified by social influences that convey information and activate emotional reactions through modelling, instruction and social persuasion” (p. 3).

Thus we see the social context of the learner as influencing the learning process in two ways. First there is the social interaction between the learner and others, including parents, teachers and peers, and second, there are the social outcomes, such as positive reinforcement from parents for good academic results. The proposal that learning occurs as a part of the social context of the learner has been tested empirically over a number of years. Studies have examined the relationship between speech within a social context and learning. It has been demonstrated that “exploratory talk” improves group reasoning (Wegerif, Mercer, & Dawes, 1999). Mercer (2008) established “that adults can guide children in how to use talk effectively,

as a cultural and psychological tool, and there is evidence that this can make a significant contribution to children's self-regulated learning and their intellectual development" (p. 99). A relationship has also been established between language and achievement where it was demonstrated that "forms of oral language...are important for subsequent performance on school-based measures of reading and writing" (Pellegrini, Galda, Bartini, & Charak, 1998, p. 52).

Bruner (1964) adopted the view that cognitive development for an individual was a two way process. He proposed that cognitive development was influenced from the outside by cultural and social factors and from the inside by the nature of the cognitive frameworks which already exist. At a pedagogical level, he expressed the view in relation to the culture within which education occurs that "to empower human beings to go beyond their 'native' predispositions, it [education] must transmit the 'toolkit' the culture has developed for doing so" (Bruner, 1997, p. 17).

The competing theories of cognitive development so far described have significant support in educational environments around the world. However, the ability of a student to learn is not simply dependent upon his or her level of cognitive development and/or the cultural-social context within which the learning takes place. The particular circumstances of the individual also play a significant, perhaps major, role in determining the potential for a person to learn. In recent years there has been a large amount of research which has investigated, at the level of the individual, why learning does or does not take place.

The potential for a student to learn successfully has been related to an educational construct called engagement. Engagement with school has been identified psychologically with interest, feelings of connectedness and motivation and behaviourally with attendance, participation in activities, effort and social interactions (Woolley & Bowen, 2007). Academic engagement has also been defined in respect of a number of different aspects of the individual, namely behavioural engagement which is related to participation in academic activities, emotional engagement which involves the emotional reactions to the educational environment, and cognitive engagement which involves the willingness to exert the effort to comprehend complex ideas (Dunleavy & Milton, 2008; Fredricks, Blumenfeld, & Paris, 2004). Student engagement is also stated to operate "at cognitive (thinking), affective (feeling) and operative (doing) levels" and that "it follows from this that when students are strongly engaged they are successfully involved in tasks of high intellectual quality and they have passionate feelings about these tasks" (Woodward & Munns, 2003, p. 3).

Engagement with school and learning for each individual is in a constant state of flux and is dependent upon the particular context and environment that an individual is in (Finn & Rock, 1997). The individual's particular level of engagement "may stem from opportunities in the school or classroom for participation, interpersonal relationships, and intellectual endeavours" (Fredricks, Blumenfeld, & Paris, 2004, p. 61).

The empirical literature indicates that the student's emotional and psychological engagement with school are primary factors associated with a high level of learning and

achievement. It is also apparent that in studies which have examined academic engagement, correlations have been found between the level of engagement and a variety of social context factors, indicating that the engagement construct cannot be considered only in terms of the student, but must also include a consideration of the social context within which the education occurs.

## **Method**

The questionnaire used in the initial quantitative study (Whannell, Allen, & Lynch, 2010) was provided to all students in the Semester 2 2009 cohort of the bridging program. It was completed by respondents during a lecture of a compulsory course in week three of the semester. One hundred and fifty one responses to the questionnaire were received with 81 of the respondents being between 18 and 22 years of age. A 75% response rate was achieved. The quantitative analysis of the data from the questionnaire established that the student-teacher relationship was the only social influence which directly correlated with academic achievement. The quality of family relationships was found to be associated with the level of engagement with school, while peer relationships associated with the participants' capacity to cope with the complexity of the curriculum. It was concluded, based upon the quantitative data, that the quality of relationships between the participants and teachers during the last two years of secondary school were substantially poorer than those with both the family and peers (Whannell, Allen, & Lynch, 2010).

This qualitative study aimed to further develop these findings and to determine if there were any commonly cited reasons for the poor quality of the student-teacher relationships which existed for the participants during the last two years of secondary school. The qualitative data was obtained from the original questionnaire which included the following question which allowed participants to make comments about their student-teacher relationships:

Do you have any comments you would like to make about your relationships with teachers?

The data available from the questionnaire was further developed by the use of 13 semi-structured interviews with respondents who had completed the initial questionnaire. The questions utilised in the interview relevant to the student-teacher relationship are listed below:

- How would you describe your experience at school in general terms?
- What specific events, if any, had a significant impact, either positive or negative, on your achievement at school?
- What people, if any, had a significant impact, either positive or negative, on your experiences at school?

- How well did you cope with the course content when you were at school?
- Is there anything else that you would like to say about your experiences during your pre-tertiary school years?

Participants were purposively selected for the interviews based upon the responses made to the initial questionnaire. Participants who had scored poorly on the questionnaire in relation to the quality of the student-teacher relationship were identified and then participants were further stratified by age and gender. Table 1 shows the age and gender of the interview participants.

Age	Males	Females
18	2	2
19	0	2
20	1	1
21	2	1
22	0	2

**Table 1 – Interview Participants by Age and Gender**

In the discussion which follows, where data from the questionnaire comments has been referred to it will be identified by a reference of the form (Q\*\*) indicating the questionnaire source to which the data refers. Where an interview has been referenced a reference in the form (I\*\*) will be used. All comments are shown verbatim as provided by the study participants.

## Discussion

An analysis of the questionnaire comments identified a total of 53 references made by 42 respondents in relation to the nature of the student-teacher relationship. Of these comments, 14 respondents made a total of 15 positive comments while 28 respondents made a total of 38 negative comments. Of the 15 positive comments, only two were identified which did not include a negative qualifying component.

*In Years 11 & 12 my teachers treated us more as adults rather than children. It was our choice to be there, and we chose the subjects. (Q12)*

*Felt more adult-adult than student-teacher. (Q136)*

One interview participant responded positively in relation to the support provided by teachers when asked what people had a significant impact on their school experiences.

*Positive, probably the teachers because they helped you with anything, like if you just went up and asked them they'd help you. (I-KMM)*

All other positive statements included a negative qualifying component, normally reserving the positive statement to only a particular teaching sub-group.

*I got along with most of my teachers. (Q123)*

*All through I didn't get much help at school they didn't pick on me they were nice. (Q13)*

*I got on well with younger teachers as I feel I could relate and understand them more. (Q132)*

*Some of my teachers were good some were bad. (Q16)*

It is apparent that in the statements above which have been viewed as positive, the respondents have usually not attributed any qualities to the teachers or nominated a reason as to why the relationship was viewed as positive. Only four comments were viewed as containing information which could be viewed as describing the particular qualities of the teacher which the respondent had related to in a positive way.

*50/50 – Some teachers were very helpful and others gave out minimal help. (Q30)*

*Most of my teachers were respectful and understanding. But then again there was always the really inappropriate teacher. (Q58)*

*I went to school in a bad area. However, I found most of my teachers were very friendly in Years 11 and 12, and actually wanted to assist me. (Q90)*

*The teachers you have make a big difference. I had a couple of really good teachers and yeah, they impacted on me and, you know, you learn, I can't find the words. (I-CGM)*

A number of negative comments were made in relation to the lack of “care” demonstrated by teachers.

*School wasn't for me. I felt the teachers didn't actually care. Which is why I'm here at TPP hopefully going to be a teacher one day and make school a warm place. (Q107)*

*It was bland, repedative [sic]. The staff couldn't care less about you... (Q128)*

*I had big classes and found none of my teachers knew my name or cared about the quality of my learning experience. (Q157)*

*I didn't mind attending. I wanted to learn but felt the teachers didn't care. (Q81)*

One interview participant described the “support” role of the teacher in wider terms than those related to academic work.

*Definitely some of my teachers, they were very supportive and I had a great form tutor as well. He was again, very supportive and also really easy going. You could talk to him about anything, if you were having problems with anybody. (I-AMY)*

The issue of the “caring” and “support” aspects of the relationship between the teacher and student has been researched extensively (Collier, 2005; McCroskey, 1992; Ruddick, 1980; Teven & McCroskey, 1997; Wentzel, 1997) and have been demonstrated to have an important role in relation to student engagement and academic performance. For example, Wentzel (1997) supports the role of caring in student engagement with the observation that “with respect to schooling, this explanation translates into the notion that students will be motivated to engage in classroom activities if they believe that teachers care about them” (p. 411). Wentzel described the caring aspect of teaching as Pedagogical Caring and described the term as “perceptions of caring teachers are related to students’ academic efforts and to their pursuit of prosocial and social responsibility goals” and established that students described the caring teacher in terms “that correspond closely to dimensions of effective parenting” (p. 415). The similarity between the caring aspect of the teaching role and that of the role of the mother has also been examined by other researchers (Collier, 2005; Ruddick, 1980).

The particular qualities of the individual caring teacher were described by Wentzel (1997) as including “democratic interaction styles, developing expectations for student behaviour in light of individual differences, modelling a ‘caring’ attitude toward their work, and providing constructive feedback” (pp. 415-416). The characteristics of the caring teacher have also been described in terms of empathy, understanding and responsiveness (McCroskey, 1992). Empathy may be defined as “the capacity to see a situation from the point of view of another person and feel how they feel about it” and understanding as “the ability to comprehend another person’s ideas, feelings and needs” (Teven & McCroskey, 1997, p. 1). Teacher responsiveness has been defined in terms of the teacher reacting “to student needs or problems quickly, when the teacher is attentive to the student, when the teacher listens to what the student says” (McCroskey, 1992, p. 111). It is also not a sufficient condition that the teacher possesses these qualities. “It is *not* the caring that counts; it is the *perception of caring* that is critical. If a teacher cares deeply, but does not communicate that attribute, he or she might as well not care at all” (Teven & McCroskey, 1997, p. 1). The verbal behaviour of teachers has been demonstrated to play “a significant role in shaping students’ perceptions of those teachers” and that teachers are perceived as having a higher level of credibility by “using more explicit, verbally caring messages directed towards their students” (Teven & Hanson, 2004, p. 50).

Klem and Connell (2004) have also demonstrated the link between the “caring” aspect of the teacher and improved engagement and academic achievement. They established that:

students who perceive teachers as creating a caring, well-structured learning environment in which expectations are high, clear, and fair are more likely to report engagement in school. In turn, high levels of engagement are associated with higher attendance and test scores (p. 270).

A relationship between the desire to learn and the perceived level of care from teachers was identified by two study participants.

*I didn't mind attending [school]. I wanted to learn but felt that the teachers didn't care. At times I felt that a teacher would pick on me because I was the only one in class who wanted to learn. (Q81)*

*Teachers. How they treated us, like they didn't care. They seem that way. But then some teachers did care...I don't know, just didn't seem right and then I just thought the way if they're going to be like that, then why should I bother. (I-DCM)*

A number of respondents who made comments relating to the lack of care on the part of teachers included references to the issues of responsiveness, empathy and understanding which have been described as being a part of the “caring” aspect of the teacher-student relationship.

*Some teachers at high school didn't understand the way I learn. I tried to explain how hard it was throu [sic] it feel like they didn't really care. Only some... (Q112)*

*I was not a bad student – just different, and they did not like that. (Q29)*

*I was always a bright student but I have ADHD the teachers and I found it hard to get along and sometimes it would affect my marks. (Q76)*

The characteristics which have been described in relation to the construct of Pedagogical Caring (Wentzel, 1997) would suggest that the teaching methods employed would cater to the differences which are found amongst the learning styles of students. A number of respondents made adverse comments in relation to the learning and teaching methods employed, both at the teacher level and at the school level.

*Can't say I like the teachers or the majority of students. Teaching methods didn't suit my learning style. (Q150)*

*I'm very visual person at school if it was more in picture and diagram I would retain more information. (Q112)*

*Teenage years are a hard time to be glued to such an institution. I felt lost and not ready to learn their way or at their pace. (Q57)*

*I feel at school, students are placed in a box. If you don't naturally take the learning method in place then you were left behind, also I would of enjoyed school if there was flexibility with learning style and gave me real work/study life expectations. (Q9)*

Skinner and Belmont (1993) investigated the relationship between classroom structure, autonomy support and involvement with student motivation and engagement. Classroom structure was described as that which is provided by the teacher clearly communicating their expectations to the student. Autonomy support was described as referring to the amount of

freedom a student is given to determine his or her own behaviour, whilst involvement referred to the quality of the interpersonal relationship which exists between the student, teachers and peers. Their research demonstrated that “teacher involvement was central to children’s experiences in the classroom and that teacher provision of both autonomy support and optimal structure predicted children’s motivation across the school year” (Skinner & Belmont, 1993, p. 571). The aspect of this research which is of particular relevance to the comments made by the bridging program students is the reciprocal nature of processes which occur between the teacher and student. The teacher behaviours when directed towards a student promote student engagement, whilst student engagement promotes the teacher to respond with behaviours specifically directed to the student to promote further engagement.

Skinner and Belmont (1993) also identified that adverse teacher behaviour towards disengaged students had the ability to exacerbate the situation for those students. “These findings suggest that students who are behaviourally disengaged receive teacher responses that should further undermine their motivation” (p. 571). This view is also supported by Klem and Connell (2004) based on a review of the literature relating to the effect of the student-teacher relationship on engagement and achievement. They established that “studies show students with caring and supportive interpersonal relationships in school report more positive academic attitudes and values, and more satisfaction with school. These students also are more engaged academically” (p. 262). Of particular interest in the findings was that “teacher measures of student engagement focus on behaviours tied directly to performance such as paying attention, staying focused, doing more than required” and that “teacher support associated highly with student engagement” (p. 270).

Thus, the literature indicates that a bi-directional relationship exists between student engagement and the amount of support which is provided by teachers to students. Where a student does not engage with the classroom environment, the literature indicates that the student will receive less support and direct interaction from the teacher which will further reduce the level of academic engagement. This directly supports the relationship between student engagement and the student-teacher relationship described by participants in this study.

Two respondents directly related their level of engagement with the nature of their relationship with the teacher.

*I enjoyed going for the social aspects but some of the work I found boring. Also I didn't get on with some teachers and so I didn't try hard. (Q113)*

*I liked going to school. I was a social butterfly and liked all my classes except Science. I tried but my teacher didn't like me so I stopped trying. (Q35)*

The relationship between the nature of the student-teacher relationship and its effect on student behaviour has been demonstrated where the student perception of teacher support and school belonging predicted increased academic self-efficacy, positive school affect, and

academic achievement (Roeser, Midgley, & Urdan, 1996) and intrinsic motivation for school (Battistich & Solomon, 1997).

A number of the questionnaire respondents targeted the school and the teacher with adverse comments in relation to the focus of education being directed at the high achiever.

*My educational experience was of a low standard. The teachers appeared to give up early on majority of the students, my schooling was reflective of this, having no motivation to succeed career wise. (Q157)*

*Good, but at times felt like they paid more attention to the people with high grades. (Q8)*

*But then there was just a group of girls that didn't clash with and the teachers didn't, if you weren't one of the brighter students you were shoved to the back of the room and they didn't really help you much. (I-WJM)*

*Like, it was a very broad class. Like, you had your high achievers, your intermediates and your lower achievers but he still tried to, he didn't ignore the lower achievers which a lot of teachers do. (I-KJA)*

*Getting everybody to participate, because they mainly just choose the same people every time...Because they're smarter I would say, from my point of view...I just felt like they were mainly working with the students that already knew everything. Well that's how I felt. (I-KAT)*

There are a number of research studies that report on the differential treatment students receive from teachers based upon the teachers' perception of the student's ability level and/or achievement (Dusek, 1975; Rosenthal, 1994; Trouilloud, Sarrazin, Martinek, & Guillet, 2002). The result of differential behaviour on the part of the teacher towards students has been described as follows: "The teachers' expectancies may cause some students to be treated in a manner that may bias their interest in school and related activities and may contribute to their doing poorly in terms of academic achievement" (Dusek, 1975, p. 680). The expectancy effect based upon student performance on the teacher manifests itself in the classroom where "teachers appear to teach more and to teach it more warmly to students for whom they have more favourable expectations" (Rosenthal, 1994, p. 178).

Goldenberg (1992) disputed the impact of teacher expectations in a case study examining teacher expectancy when he observed that "what really matters for student achievement is what teachers do – or, as it turned out, fail to do" (p. 541). When the comments made are examined, we see that it is the actions taken by teachers when acting on their expectations which are often described. The teacher actions described in the current study included "he didn't ignore the lower achievers which a lot of teachers do" (I-KJA), "if you weren't one of the brighter students you were shoved to the back of the room and they didn't really help you much" (I-WJM), "at times felt like they paid more attention to the people with high grades" (Q8) and "the teacher appeared to give up early on majority of the students" (Q157). This variation of behaviour on

the part of the teacher based upon their expectancy of academic performance by students has been clearly demonstrated in previous studies (Babad, 1995; Chaikin, Sigler, & Derlega, 1974; Rosenthal, 1994). In a meta-analysis of studies done in relation to the effects of teacher expectancy on student academic performance the major aspect of teacher expectancies which influenced student performance were described as “teachers’ affective behaviours (e.g. warmth, support, smiling) and the socioemotional climate they create for high- and low-expectancy students [and the] amount and quality of teaching behaviours directed at particular students” (Blanck, 1993, p. 135). These particular aspects correspond very closely to the two primary issues which have been identified within this study in relation to the nature of the student-teacher relationship, namely the caring and support of students by teachers and the differential behaviours demonstrated by teachers based upon their expectancy of student academic performance.

Another consequence of teacher expectancy and teacher differential behaviour towards students is the effect on the students’ self-expectancy of academic performance. There is clear evidence which indicates that where a student perceives differential teacher behaviour which indicates that they lack academic ability, the student may also adopt that expectancy. The adoption of the expectancy on the part of the student has been identified as leading to reduced levels of academic engagement and achievement (Haynes & Johnson, 1983; Smead & Chase, 1981).

## **Conclusion**

While the socio-cultural literature describes the relationship between students and teachers as being pivotal to educational success, many of the participants in this study have not perceived these relationships to be of an appropriate quality to support their educational aspirations. The principal factors identified which have damaged the student-teacher relationship for the participants was a perceived lack of care and support from teachers and differential behaviour by the teacher based upon the teachers’ perception of the participants lack of academic ability.

It is not suggested that teachers do not care for students and/or knowingly differentiate their behaviour based upon student academic ability. Rather, it is proposed that the major implication for practice that this study has, is that teachers must be sensitive to their behaviours in the classroom and look to identify where those behaviours may be negatively impacting students. An additional challenge for teachers is that their behaviours are interpreted based upon students’ perceptions, which may or may not be accurate. The opportunity for open and robust communication between the student and teacher appears as essential to ensure that inaccurate perceptions are able to be dealt with at the earliest opportunity.

Previous research (Cantwell, Archer, & Bourke, 2001; Archer, Cantwell, & Bourke, 1999) has demonstrated that the quality of academic outcomes during undergraduate study for

students who have gained access to university by non-traditional means is comparable to that of students who enter university by traditional means. This indicates that the academic potential of both groups of students is comparable. When viewed in this way it raises the question as to why the participants in this study had such a negative secondary school experience and demonstrated such poor academic outcomes.

The participants in this study have described the behaviour which attracts positive attention from a teacher in terms of high academic ability and achievement. One possible explanation of the teachers' behaviour is that, in a classroom which contains students of widely ranging academic capacity, the work of teaching is made easier when teaching is directed to students who are engaged with the content, who understand it well and achieve good academic results. It presents a much more challenging situation to the teacher to engage with students who are perceived to be of lower academic capacity and who progress at a slower rate. A related scenario is that, in a classroom with a substantial number of students, the limited teaching time available is directed towards those students who will benefit most from the teachers' efforts. That is, the more academically capable students who are able to engage best with the content.

It is not suggested that, where a teacher demonstrates these behaviours, they are being done so consciously to the detriment of the lower achieving students. What is proposed is that teachers, who are working in the time challenged and stressful situation the classroom often presents, will unconsciously choose their behaviours to achieve what is perceived as the maximum result for their efforts. This will orient them towards working with the more academically able students.

While the capacity for teacher behaviour to negatively influence the academic outcomes of students has been described for many years (Goldenberg, 1992; Dusek, 1975; Rosenthal, 1994), it appears that the situation still exists where students, such as the participants in this study, are not achieving to their full academic potential for this reason. The current Australian Professional Standards for Teachers (Australian Institute for Teaching and School Leadership, 2012) include specific standards which require teachers to cater to the individual differences of students, that all students have the opportunity to engage with the curriculum and all students be given the opportunity to achieve to their maximum potential. This study provides strong evidence for the need for such requirements and for teachers to work diligently to ensure that this occurs in their classroom. In particular, teachers need to be aware of the impacts that their in-class behaviours, even unconsciously driven ones, may have on students.

One factor which is relevant to understanding why the participants in this study have returned to continue their education are the changes which may have occurred during the move from late adolescence to early adulthood. The potential exists for this life stage transition to influence the attitudes of the participants towards their previous educational experiences. These changes may then be reflected in their decision making in relation to engaging in further education. The potential exists for further longitudinal research to be conducted that examines this area for academic underachievers in secondary school with a view to understanding how to assist them to reengage with higher education.

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## ABSTRACT

### THE IMPACT OF FACEBOOK ON UNDERGRADUATE ACADEMIC PERFORMANCE: IMPLICATIONS FOR EDUCATIONAL LEADERS

by Dr. Andria Moon

This study explored the impact of Facebook use on undergraduate academic performance. Online social network sites such as Facebook serve as a significant resource and potential distraction for undergraduates. Vital to the lives of many college students, Facebook and other online social network sites are here to stay. These sites serve a beneficial purpose as colleges and universities use them to communicate with students, as well as faculty use for academic purposes. The purpose of this study was to investigate what impact Facebook use had on undergraduate academic performance. Specifically, the researcher aimed to explore if the impact of Facebook use significantly affected undergraduate student academic performance. The study exercised quantitative methodology surveying 400 undergraduate students using a Web-based survey at one Midwestern Institution. The goal was to determine if relationships exist between academic performance (cumulative college GPA) and ACT score, high school GPA, extracurricular activities, academic preparation, Facebook use (hours per week spent on Facebook), community service, communication, paid work, video gaming, watching television, and recreational Internet use. Multiple regression analysis was used to analyze the results of the survey. The study findings did not indicate a strong relationship or correlation between Facebook use (hours spent per week on Facebook) and academic performance (cumulative college GPA). However, Internet use, extracurricular activities, and community service did have a relationship with academic performance (cumulative college GPA). A significant point from the present research is that 97% of the respondents were Facebook users. An implication from the present study for educational leaders, faculty, and student affairs professionals is that most

college students check Facebook during their academic preparation. The study found that that 86.3% of undergraduates in the study check their Facebook account during their academic preparation (studying, writing papers, conducting group work, working on projects, researching information, etc.). Educational leaders, faculty, and student affairs professionals should be aware of students' habits and behaviors on Facebook.

## Reforming Teacher Education Programs: A Response to Changing Student Demographics

### Abstract

An analysis of recent demographic data indicates that minority students may not be in the minority for very long (Tavernise, 2012); a fact that will undoubtedly have significant implications for 21<sup>st</sup> century American public schools and teacher education programs. This research paper will use a qualitative historical methodology to explore past reforms of American teacher education programs to determine appropriate recommendations for the 21<sup>st</sup> century. The authors will utilize Berger & Luckmann's (1967) Socially Constructed Theory and Gay's (2010) Culturally Responsive Teaching approach as conceptual frameworks to recommend appropriate reforms for American teacher education programs. Research findings will include pre-service teacher preparation and professional development/in-service teacher training, conducted in the past decade. Additionally, the latest statistical data from the US Department of Education will also be reviewed to reveal the scope of 21<sup>st</sup> century student diversity and educational needs.

## The Changing Face of Education

Today's K-12 public education classroom is rich in diversity (including race, ability, and languages). As such a teacher may find the classroom a new and challenging place from year to year, as new students are enrolled annually. By the year 2021 the American Public school system is projected to have 53,113,000 students enrolled in K-12. That number is up from the actual count in 2010 of 49,484,000 students (USDOE, 2010). This is good news for teachers as more students can mean more jobs and job security. However, more students can also mean more student needs. This is the current and future reality of public education; especially since as of July 2011, what was once the majority is now the minority in terms of birth rate in the United States (Tavernise, 2012). Given this cultural shift, the first section of this paper begins to explore the needs of students by identifying who they are and who their typical teacher may be.

Research question:

1. In light of the changing student demographics in the United States, what are appropriate reforms that can be made to 21<sup>st</sup> century American teacher education programs?

## Conceptual Framework

The conceptual framework for this paper lies in two widely known concepts. The first is Berger & Luckmann's (1967) Socially Constructed Theory, where one examines societal change as pathways to understand both the precursors and outcomes of reform. Given the historical nature of this paper the authors selected this framework to guide the research methodology. Thus educational reform pathways were established via the lens of social change. The second

framework comes from Gay's (2010) Culturally Responsive Teaching, where teachers approach the educational process with an open, kind, and understanding heart. Given the change in race and ethnicity regarding student demographics a Culturally Responsive approach was warranted to determine appropriate reforms for teacher education programs.

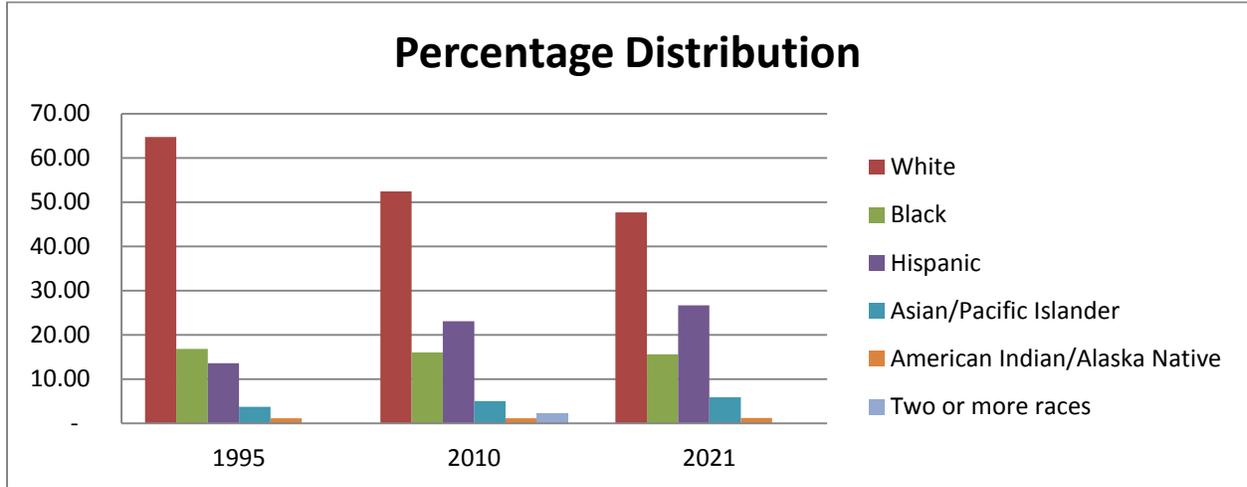
### Methodology

This paper historically looks at educational reform in the past to help determine an appropriate trajectory of reform in the present and near future. Both primary and secondary sources were utilized to develop a clear narrative of educational reform. This narrative was then compared to the current demographics to recommend an ideal reform for teacher education programs. Once the data was collected and analyzed a proposal for a new kind of teacher education program was developed.

### Results

According to a 2010 U.S. Department of Education Common Core of Data report entitled "State Nonfiscal Survey of Public Elementary and Secondary Education", the face of education is changing. The White and Black student populations in public K-12 schools are decreasing while the Hispanic, Asian/Pacific Islander, and Biracial populations are growing, and have been since 1995. Looking into the future we see these trends progressing, and by 2021 we may actually see the White student population drop below 50 percent and the Hispanic population grow to almost 30 percent, thereby making this group the next largest population, as depicted in the table below.

Table 1. Student Demographics & Projections



*SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary and Secondary Education," 1995-96 through 2010-11; and Projections of Education Statistics to 2021.*

As the number of Hispanic students rise and the number of White students decrease in our public schools, an examination of how student's needs were met may be in order. Howe & Lisi (2014) examine the role of privilege and cultural identity in society and the classroom, they write, "Privilege that is linked to identity has its grounding in the United States in the very beginnings of this country. ...In fact, diverse groups of people in this country, today, do not start on a level playing field" (p. 146). While many have recognized a similar truth, it is in this characterization of privilege and identity that we are able to recognize how a profound shift in student demographics may have an effect on teaching and learning.

Moreover, as the number of Hispanic students increase we should also expect to see an increased awareness and interest in the development of a Multicultural Curriculum. Traditionally, minority students have experienced an education that largely did not discuss or honor the richness of their

cultures. In *How Minority Student Experience College: Implications for Planning and Policy*, Watson, Terrell, Wrights, Bonner II, Cuyjet, Gold, Rudy, & Person (2002) interviewed minority undergraduate students at seven higher education institutions, their findings were largely not unique to higher education and many of these truths had a firm foundation in the K-12 system. They wrote,

A related theme to the individual viewed as the spokesperson for an entire group was the notion that students often believed they were not seen as individuals, but as generic parts of a larger group. Students were concerned about their assigned responsibilities as spokespersons for their respective minority community and for their race. Students believed assumptions were often made about them based on their minority group membership. They also had qualms about their institutions' proclivities for lumping all minority students into categories" (Watson, et al., 2002, p. 69).

Therefore minority students have been spotlighted in classrooms to be the bridge between the learning environment (i.e. society) and the specific culture the learner represents. This has been a problem for many students because it singled them out from the rest of the class even more. Also, the added pressure to provide accurate information for the class may be overwhelming. The student, in this scenario, has become the resident expert in the absence of any further elaboration of the topic by the teacher's lecture or lesson plan. Although this study was conducted with college students, this resident-cultural expert practice is not foreign to K-12 schools (Gay, 2010; Nieto & Bode, 2011).

In considering the role of educational administration and social justice in the classroom, we have found that minority students have largely been tracked based on the perception of their ability due to race. Marshall & Oliva (2006) shared that, “inequitable outcomes [in K-12 students] are not merely the results of deficiencies in students, nor the communities from which they come, as was often assumed to be the case. Instead, inequitable outcomes often results from systematic organizational practices and policies...” (p.6). Looking back at the increasing trend of minorities in general, this statement from Marshall & Oliva demands a significant change from school administrators and teachers who continue to participate in this unfortunate and inequitable practice. However, damaging a school’s policy and practices may be, it is likely that these policies and practice remain in place today due to habit and not harm.

These damaging school policies and practice may also have a profound effect on minority students regarding test scores. Novak & Fuller (2003) revealed that the more diverse the school, the more likely the school would have a harder time meeting AYP. Their study compared California public schools’ AYP scores over 2 years. They found “...that the percentage of schools hitting their AYP growth target [was] strongly related to the number of student subgroups. In addition, schools serving lower income families and their children, on average, [were] less likely to have achieved their AYP growth targets” (Novak & Fuller, 2003, p. 4). These researchers also noted that Latinos (a.k.a. Hispanics) were heavily populated in poorest schools.

### Demographics of Public School Teachers

Though Novak & Fuller (2003) argue that the demographics of students matter when looking at AYP, we felt it necessary to look at teacher demographics, to understand who the average K-12

teacher is and how well he or she may be prepared for a classroom of diverse student needs. We came across a U.S. Department of Education's National Center for Education Statistics questionnaire for Public School Teachers. The questionnaire is a part of the School and Staffing Survey for the 2007-08 school year, entitled a "Public Teachers Questionnaire" was issued and published in 2009 by the U.S. Department of Education's National Center for Education Statistics.

Of the high school teacher participants who completed the questionnaire, 58% were female, 83% were White, 26.4% teachers were between the ages of 50-59, and 46% had a Master's degree. In understanding that the average high school teacher may be an older white female teacher with a graduate degree, we believe that the need to provide professional development to address the increase of the linguistically and culturally diverse learners in schools.

With the current and projected increase in student race and ethnicity for K-12 schools (Tavernise, 2012), we believe that the changing face of education needs to be addressed by teacher preparation programs and on-site teacher professional development opportunities. Moreover, the rise in more disabled students in the classroom, as well as the number of students participating in ELL programs speaks to the need to the need to prepare and educate teachers for the needs of their future classroom.

## Teacher Practice, Teacher Education, and Culturally Responsive Pedagogy

One of this paper's authors worked for 31 years in rural, Title I school districts in Alaska and Oregon. Additionally, this same author served as a building principal, a district Title III Director, and a district Human Resources Director. As a result, this author has had ample opportunity to observe classroom teachers, observe and conduct professional development training, observe and direct a Title III program, and interview new teacher candidates.

This observation and experience strongly suggests that a significant majority of current classroom teachers have not been properly prepared to offer a culturally responsive classroom experience to their students. Villegas & Lucas (2002) championed the idea that we need to train teachers on culturally responsive practices to meet the needs of the growing diversity in the classroom. They wrote,

All of us involved in the education of teachers at our institutions must engage in dialogue to develop a collective vision of teaching and learning in a multicultural society.

We need to examine and revise the curriculum in light of that vision. We need to spend time coordinating the desired responsive teaching qualities with the courses we teach and the field experiences we offer. We need professional development that will help us model the responsive teaching qualities reflected in the revised curriculum. (p. 30)

In effect they have called for a more reflective and proactive approach to preparing teachers and students to ensure that education is an enriching experience for both parties. Moreover, Title

III/ELL programs are often viewed by teachers in much the same way as special education program intrusions—Good for students, but yet another imposition on the classroom teacher, primarily due to lack of effective professional development for working with special populations and the time and effort needed to implement change. This is an important factor, as classroom teachers are the actual people who carry out the reforms in direct contact with students. Finally, pre-service teacher preparation, even for prospective English Language Learner (ELL) teachers, while providing preparation for teaching English language development, is much less visible with regard to Culturally Responsive Pedagogy. The following table of research findings supports these observations.

Table 2. Research findings

Topic	References	Findings
<b>Effect of ELL Programs on Classroom Teacher practice</b>	<ol style="list-style-type: none"> <li>1. Biscoe (2011)</li> <li>2. Rios-Aguilar, Gonzalez-Canche, &amp; Moll (2010)</li> <li>3. Couch (2010)</li> </ol>	<ol style="list-style-type: none"> <li>1. Training for teachers is inadequate, but teachers take pride in the accomplishments of their ELL students.</li> <li>2. Teachers have faith in their ELL students, but see students as marginalized due to program-based separation from peers. in classroom,</li> <li>3. Teachers believe that ELL students are similarly capable to other students; teachers further believe that they need additional training for teaching ELL students and communicating with ELL parents.</li> </ol>
<b>Pre-Service Teacher Preparation for Culturally Responsive Pedagogy and Practice</b>	<ol style="list-style-type: none"> <li>1. Taylor (2010)</li> <li>2. Eick &amp; McCormick (2010)</li> <li>3. Wong (2008)</li> </ol>	<ol style="list-style-type: none"> <li>1. Teacher education programs need to address culturally responsive pedagogy</li> <li>2. Critical Reflection and practical application are needed in order to develop skill</li> </ol>

		<p>in teaching diverse students.</p> <p>3. Uses Gay's framework of Culturally Responsive Pedagogy (2000) as a basis for developing relationships with students.</p>
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What this suggests is that there is a clear need for solutions to address these perceived deficiencies. Current classroom teachers (as noted above by Reese, 2007) have significant educational and societal expectations to meet, and therefore benefit from being properly prepared and trained to address them. Finally, the research suggests that university teacher education programs need to make the necessary adjustments to more fully train prospective teacher candidates in culturally responsive pedagogy.

### Recommendations

Based on the foregoing, we recommend the implementation of (or improvement to) Culturally Responsive Pedagogy for teacher education programs; given the rapidly changing and increasingly diverse educational environment that is occurring in classrooms today and will continue in the near future.

We recommend that teacher education programs be substantially revised to more fully incorporate Culturally Responsive Pedagogy as part of its teacher preparation efforts. We envision the implementation of Culturally Responsive Pedagogy to include: (1) coursework specifically aimed at Culturally Responsive Practices for teacher education students, (2) applying these practices in field experiences, (3) participation in community-based observations and

school-based observations, and (4) developing service learning experiences for their future students.

Coursework is a key part of any teacher education program, and it is likely that making adjustments to both core and elective offerings by adding courses about Culturally Responsive Pedagogy and Practices can be accomplished as part of a general program review, periodic individual course adjustments, or other routine process. Certainly, instructors and curriculum specialists developing these courses should have expertise in the area of Culturally Responsive Pedagogy and Practices, and should be able to translate that expertise into effective course designs.

Additional components of the coursework aspect of the program should include opportunities for reflective book studies (Eick & McCormick, 2011), as well as participation in professional forums for program development, as outlined by Potts & Shlichting (2011). While the forums described by Potts & Schlichting (2011) were aimed at teacher-education faculty, including teacher education students would offer additional perspective in these discussions and may yield positive results.

Perhaps the more challenging (but also most rewarding) part of adding Culturally Responsive Pedagogy and Practices to a teacher education program is to be found in providing for field experiences. Catapano & Huisman (2010), and Noel (2010) both recommend a community based field Experiences. Capatano & Huisman (2010) focus on the idea that teachers need to

understand the communities they will be teaching in. Noel (2010) notes that these programs should seek to include the community in program design and implementation.

Many teacher education programs make provision for classroom observation. We suggest that this include a significant reflective component, as suggested by Taylor (2010). Schon (1984) has written very effectively about the value of reflective practice for professionals; Taylor (2010) notes that this is a necessity for teacher education instructors in conducting their work. We recommend extending this practice to pre-service teachers. As such, it may be necessary to explicitly teach reflective practice skills to pre-service teachers, however, the time spent doing this is time well spent. Pre-service teachers can already begin to use reflective practices that will benefit them and their students over their career.

Wong (2011) notes the value of service learning, such as tutoring diverse students, in providing for practical application of Culturally Responsive Pedagogy. Service learning puts pre-service teachers in the community, working directly with students and others, in both applying and practicing what they have learned in the classroom.

Blending these components to create a more comprehensive program makes good sense. Pre-service teachers will have a better foundation to work from than coursework alone; we believe that providing opportunities for community interactions would significantly enhance the teacher education program in ways that classroom observations cannot provide alone. Additionally, and more importantly, doing these things can work toward significant social change. It sets the stage for this social change in the classic manner outlined in Berger & Luckmann (1967). In time, this

approach to teacher education could grow to become the widely accepted manner of teacher preparation.

### Conclusion

By attending to our current demographic realities, teacher education programs should reflect this change in student populations and attend to these new needs in culturally responsive ways. In modifying a teacher education program to include coursework in Culturally Responsive Pedagogy and Practices, along with opportunities for reflection and professional engagement, and engagement in community- and classroom-based observations and service learning, college and university teacher education programs can help to create needed social change. This Culturally Responsive approach to the changing demographics of our society will be a significant step towards meeting the needs of all students and our diversified American community at-large.

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**Title:** Digital Citizenship: The Rules of Netiquette

**Description:** This workshop aims to address the rise of digital citizenship and how it will affect both teaching and learning. In this workshop, a university professor and secondary school teacher will introduce and prepare participants to the issues surrounding digital citizenship such as the idea of privacy, cyber bullying, the impact of social media has on graduates, and the negatives and positives of social and the impact it will have on the education professional arena.

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## **Digital Citizenship: The Rules of Netiquette**

This workshop addresses the rise of digital citizenship and how it affects both teaching and learning. In this workshop, a university professor and secondary school teacher will introduce and prepare participants to recognize the issues surrounding digital citizenship including the concept of privacy, cyber bullying, the impact of social media has on graduates, and the negatives and positives of social media and the impact it is having on the education professional arena. Currently, scholarly literature dictates that digital citizenship is the fastest area in educational technology and has a huge impact on all levels of teaching from primary to university.

In this workshop, professors Lemon and Jafralie will present the concept of digital citizenship and outline what this concept entails. Also, participants will be introduced to the changes happening and trends in digital citizenship. The workshop will focus on the changes to the laws of privacy in an educational context, the evolution and legal implications of cyber bullying from secondary to higher education and lastly, the role and impact of social media has on graduates entering the workforce, and most importantly, education's role in teaching students how to safely and effectively navigate the social media stream.

Title of Submission: **Sexual Abuse Prevention Education**

Topic area of submission: Cross-disciplinary areas of Education (Safety, Adult Education, Counseling, and Policy)

Presentation Format: Panel Session

Description of Presentation: This study surveyed 165 parents within the South Whittier school district. Parents surveyed were asked 24 questions pertaining to child sexual abuse understanding and their views on child education on child sexual abuse prevention (CSAP). The significance of this research is to understand what parents' beliefs are regarding CSAP, in order to see what educational tools parents can be provided in building communication and protecting their children from sexual abuse.

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**Abstract: Sexual Abuse Prevention Education**

Since 1977, child sexual abuse prevention (CSAP) programs have been conducted in the United States, Canada, and other countries (Chen & Chen, 2005.) But, since the 1990's the CSAP programs have been on a decline (Finkelhor, 2009). Sex crimes, like overall crime has decreased since the 1990's but it is hard to tell if prevention programs like CSAP have influenced the decline that is currently seen (Finkelhor, 2009). In addition, there are few published reports on parents' awareness of CSAP (Chen & Chen, 2005).

The highest risk ages for sexual abuse are between the ages of 7-13 years old (Kenny, 2009). 30% of reported sexual abuse takes place before 9 years old (Kenny, 2009). In a study by Lampert and Walsh, the age onset for child sexual abuse was marked at 8 years old in the United States but the age onset for abuse in Australian studies was marked at 10 years old (2010).

The significance of this research is to understand what parents' beliefs are regarding CSAP, in order to see what educational tools parents can be provided in building communication and protecting their children from sexual abuse.

The population surveyed was made up of 165 parents that had a child or children attending elementary school in the South Whittier school district in Los Angeles County, California. A survey and consent form were submitted, reviewed and accepted by the Claremont Graduate University IRB for use and distribution. A total of two South Whittier elementary schools participated and allowed for this research project. Parents were approached prior to or after school and asked if they would voluntarily and confidentially agree to take a survey on safety for their children. Parents that were interested were asked to enter the library in order to fill out the questionnaire. The questionnaire is made up of 24 questions and uses Likert scale measurement.

To understand the awareness of parents on CSAP, the age parents feel it is appropriate to educate children on CSAP, to correlate parents' previous exposure to victims of abuse, and the comfort parents feel in discussing child sexual abuse a variety of statistical analyses were performed: descriptives, frequencies, t-tests, correlations, factor analysis, multivariate regressions, and path diagrams.

# Pupil Size and Fixation Time of Elementary Students on Classifying Test

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## <abstract>

Information about where students gaze or how to gaze during problem-solving allows us to understand their cognitive process clearly. Difference of cognitive process is obvious among students as well as more outstanding especially between a successful group and an unsuccessful group.

In this paper, differences of eye movement between two groups of elementary school students are presented during classifying test.

SMI (SensoMotoric Instruments)' iView X™ RED 120 Hz was used in order to collect eye movement data. Nineteen elementary school students answered two classifying problems while their eye-movements were recorded. Participants were divided by classifying test into two groups (successful students, unsuccessful students).

Pupil size and fixation time proportion were analyzed to establish differences between the successful group and the unsuccessful group. The current study showed that ( i ) the average of pupil sizes of the successful tended to be larger than that of the unsuccessful during classifying test; (ii) the more difficult problems were, the larger pupil size of the successful were while there was no change in condition of the unsuccessful; (iii) the successful group's fixation time proportion on critical clues that were useful to problem-solving was higher than that of the unsuccessful.

The findings from these analyses suggest that cognitive load occurs when more difficult problems are given to the successful in spite of no change in same situation of the unsuccessful. Furthermore, a more useful information search takes place on problem-solving of classifying test of the successful group than that of the unsuccessful. The divide between them allows us to not only distinguish unsuccessful students from successful students in classifying learning but also develop teaching and learning strategies that educate classifying learning effectively.

## 1. Introduction

Doing a great job on reasoning inductively helps students to improve not only intellectual functioning but also scholastic achievement (Csapó, 1997; Klauer *et al.*, 2002; Sternberg, & Gardner, 1983). Classifying activity, one of inductive reasoning, plays an important role in science education because not only provides it a theoretical frame that contributes to developing concepts but also it can structuralize field of inquiry systematically (Klauer, & Phye, 1995). Especially classifying creatures is required to constant concentration such as discovering characteristics of them and determining the criteria for classifying (Byun *et al.*, 2013; Cho *et al.*, 2005; Klauer *et al.*, 2002). We can know whether students' attention concentration takes place or not by confirming students' classifying activity. Moreover, classifying test can make it possible to judge whether students solve problems effectively because scientific problem-solving process is represented in classifying activity.

Cognitive process during problem-solving can be learned through where participants gaze or how to gaze (Chuang, & Liu, 2012; Tang, & Pienta, 2012). Attention linked to cognitive processing is indicated by eye movements directly and objectively (Rayner, 1998) because preconscious mechanisms lead to early visual attention processes (Terburg *et al.*, 2011). Eye tracking is used in this research for reasons as follows. First, eye-tracking extracts physiological parameter, pupil response, of participants (Kim *et al.*, 2007) and we can get information about not only at which point participants gaze but also how they respond through it; thus, it helps us to measure learning effect and improve student's learning (Shin, & Shin, 2012, 2013). Second, eye-tracking enables us to detect more accurate and subtle data related to student's attention as well as cognitive processing in comparison to traditional assessment methods (Tai *et al.*, 2006). Third, there are several researches which study the difference of science problem-solving between novices and experts using an eye tracker. Differences of cognitive process are represented by eye movements on these studies.

Fixation occurs when information is important and interesting (Holmqvist *et al.*, 2011) and the more information is complex, the more fixation time is (Goldberg, & Kotval, 1999; Henderson, 1992; Holmqvist *et al.*, 2011); thus, degrees of cognitive load can be expressed by fixation time. Pupil size expands and contracts by mental state and by the amount of cognitive load (Holmqvist *et al.*, 2011; Kahneman, & Beatty, 1966). In study of education, useful information about cognitive load is obtained by extension of pupil size (Holmqvist *et al.*, 2011; Van Gerven *et al.*, 2002).

Changes of pupil size on mental workload, emotion and anticipation, drowsiness, diabetes, age, pain and drugs are researched (Holmqvist *et al.*, 2011). However, there are little studies about eye movements on classifying problems between a successful group and an unsuccessful group until the present; therefore, the current study was performed. In this paper, differences of eye movement between two groups (successful students, unsuccessful students) of elementary school students are presented during classifying test.

## **2. Method**

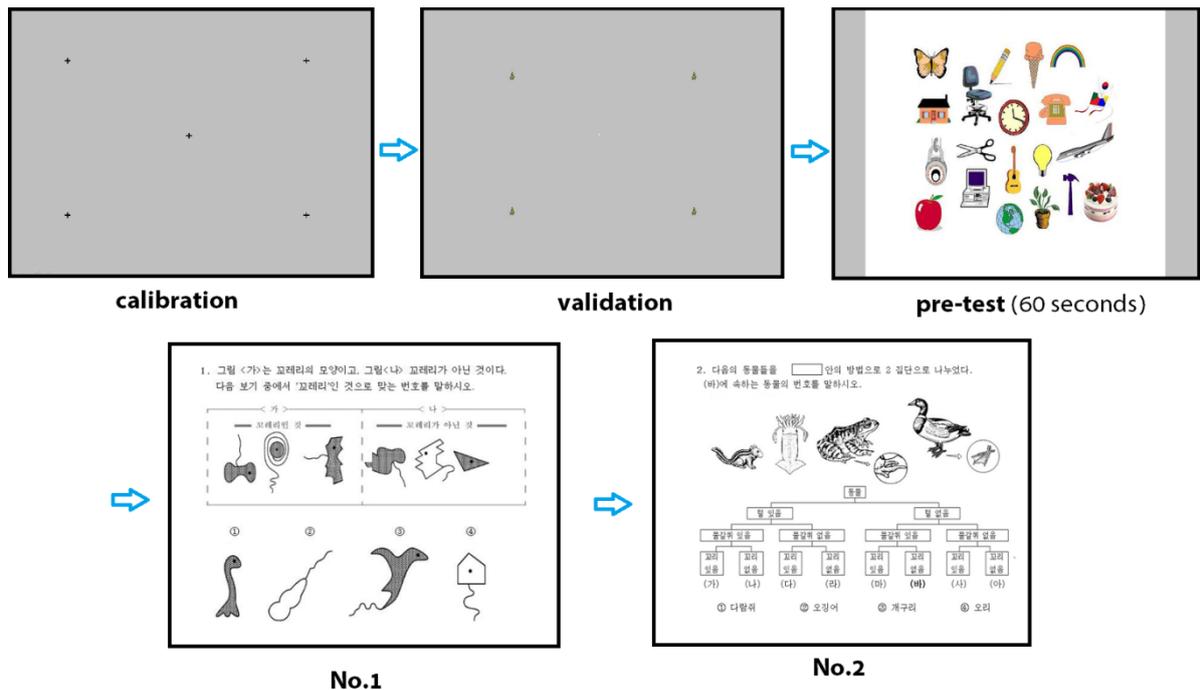
### 2.1. Participants

The participants were nineteen 6<sup>th</sup> grade Korean students and they all volunteered to participate in this experiment. It was divided by two groups (six successful students and thirteen unsuccessful students) depending on classifying test. We got their guardian's consent.

### 2.2. Experimental design

An expert group consisted of two experts of science education and three masters of science education in elementary school. They took part in seminar four times for selecting problems, designing an experiment, analyzing the conclusion. First experiment was designed using SMI (SensoMotoric Instruments)' Experiment 3.2 program. A pilot test was performed for suitability and validity targeting five elementary school students of a general class (Holmqvist *et al.*, 2011; Shin, & Shin 2012, 2013). After analyzing the pilot test, a presentation method was redesigned.

<Fig 1>



<Fig 1> Experiment design

### 2.3. Apparatus : table-mounted eye-tracker

An eye tracker that tracks individual's eye movements is a noninvasive measure; it is suitable to an experiment of elementary school students (Holmqvist *et al.*, 2011; Shin, & Shin, 2012, 2013; SMI, 2011a). Image processing based on computer and infrared rays make it possible to monitor movements of pupil and to measure pupil size. SMI (SensoMotoric Instruments)' iView X™ RED was used in order to collect eye movement data. The velocity of eye movement was 120 Hz as well as stimuli were presented on a monitor whose size was 1680 x 1050 pixel (width x height). After analyzing data using BeGaze 3.2 software, discussions and the conclusion were drawn. Participants' pupil size and fixation time proportion (FTP) were analyzed to find the difference of cognitive process between successful students and unsuccessful students.

### 2.4. Procedure

After listening to operator's brief instruction, participants sat in front of the eye tracker attached to monitor. First, participants' eye movement was calibrated by designated five targets on monitor. Calibration is positively necessary due to individual variation of eye radius and shape (Choi *et al.*, 2012; Holmqvist *et al.*, 2011; Shin, & Shin 2012, 2013). Second, validation was repeated until pupil deviation of x and y axis was less than 0.5° because maximum deviation of pupil should be lower

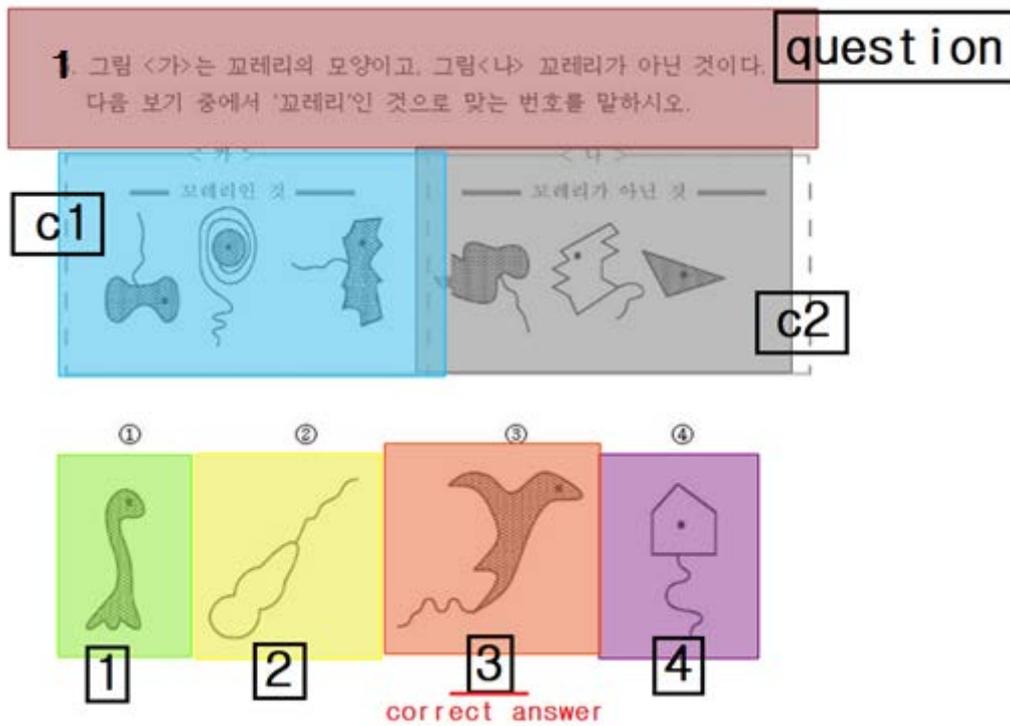
than 0.5° in x and y axis (Holmqvist *et al.*, 2011, Shin, & Shin 2012, 2013; SMI 2011b). Then, for sixty seconds, a pre-test was presented for participants to adapt the current experiment. After seeing a classifying problem, participants answered the problem orally. Pressing the space bar, they could move on to the next step.

## 2.5. Stimulus materials

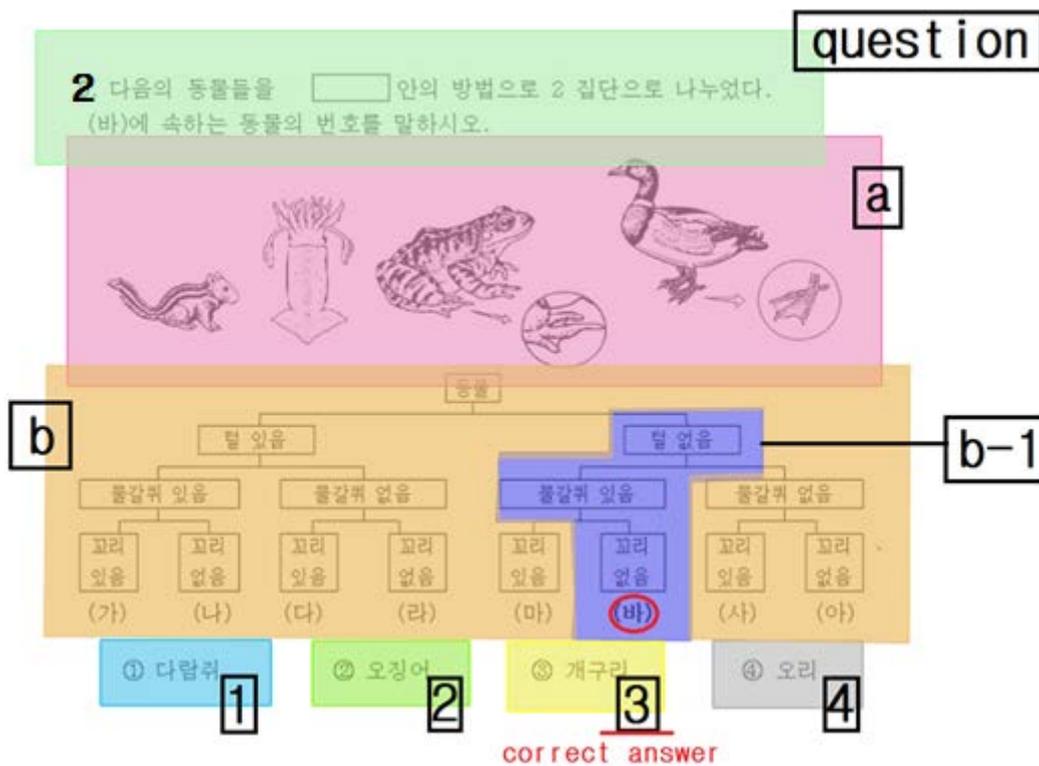
Nineteen elementary students in Korea answered two classifying problems while their eye-movements were recorded. It was selected as two classifying problems which were adequate to eye tracking system through a preliminary inspection of TSPS (Test of Science Process Skill) developed by Kwon & Kim (1994). Students generally have troubles in No.1 and higher cognitive load is demanded during solving No.1 than No.2 because not only is mellinark an imaginary animal but also it is not observed directly; it is not easy to connect with conceptual elements in long-term memory. Difficulty of No.2 is lower because animals in No.2 can be seen easily as well as often learned in school, though.

## 2.6. Data analyses

All data of eye movements are separated by setting up minimum fixation duration; fixation and saccade (Shin, & Shin, 2012; SMI, 2011b). Minimum fixation duration in current study was configured to 200ms because recent studies mostly did like this (Choi *et al.*, 2012; Cook *et al.*, 2011; Liu, & Shen, 2011; Shin, & Shin 2012; Tsai *et al.*, 2012;) as well as the average of fixation time on pilot test was 200ms.



<Fig 2> Classifying problem No.1



<Fig 3> Classifying problem No.2

In the first problem, participants should find a mellinark on condition that it was presented examples of mellinark and non-mellinark. A mellinark is a meaningless word to measure classifying ability. In the second problem, participants should find the animal corresponding to red circle on <Fig 3>. Clues that were helpful to solve the problem were located in 'b-1'.

### 2.6.1. Pupil size

Pupil sizes of all participants were measured while they solved No.1 and No.2. Pupil sizes for problem solving were averaged individually. Individual pupil size during problem-solving was averaged per groups (the successful and the unsuccessful). Then, we compared the successful to unsuccessful.

### 2.6.2. Fixation time proportion (FTP)

AOI (area of interest) was configured as <Fig 2> and <Fig 3>. The FTP of all participants was abstracted using BeGaze 3.2 and the averages per AOI were analyzed.

## 3. Results

Successful students got the right answer in two classifying problems while unsuccessful students did not do that. 38.46 percent of the unsuccessful group said incorrect answers in all problems and the rest of them said correct answers in a single problem. Only one student of the unsuccessful group gave the correct answer in No.1. Therefore, it was considered that classifying ability of successful students was better than unsuccessful students.

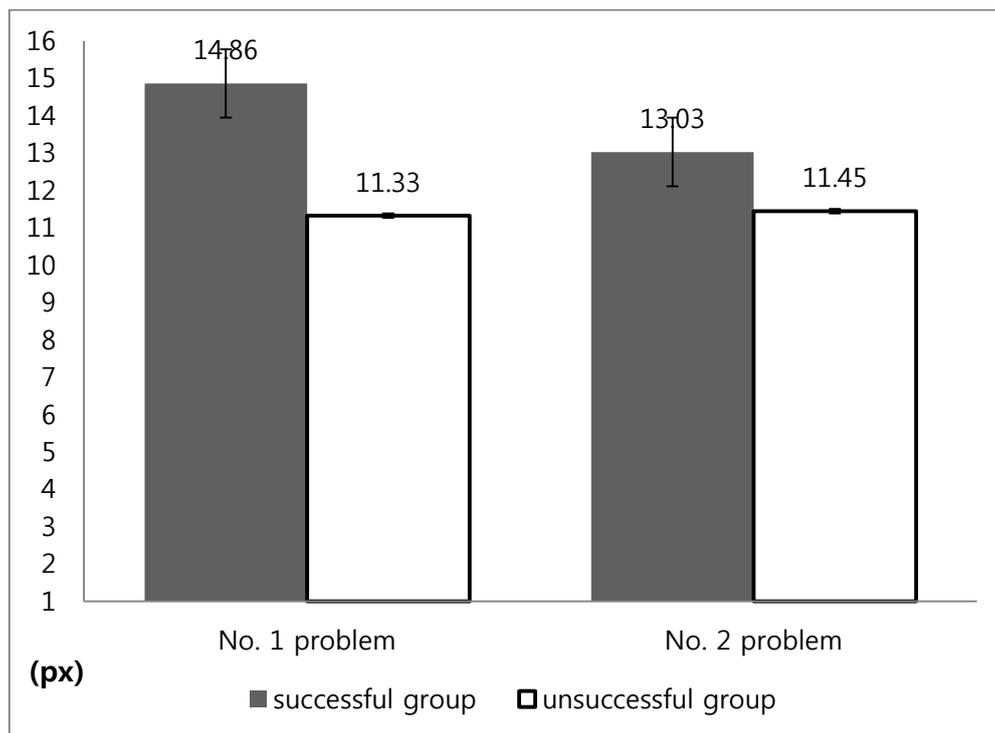
**<Table 1> Results of participants' problem-solving**

Problem	Participants																		
	Successful students						Unsuccessful students												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
No.1	O	O	O	O	O	O	X	X	X	X	X	X	X	O	X	X	X	X	X
No.2	O	O	O	O	O	O	O	O	X	O	X	O	O	X	X	X	O	O	X

O : correct, X : incorrect

### 3.1. Pupil size

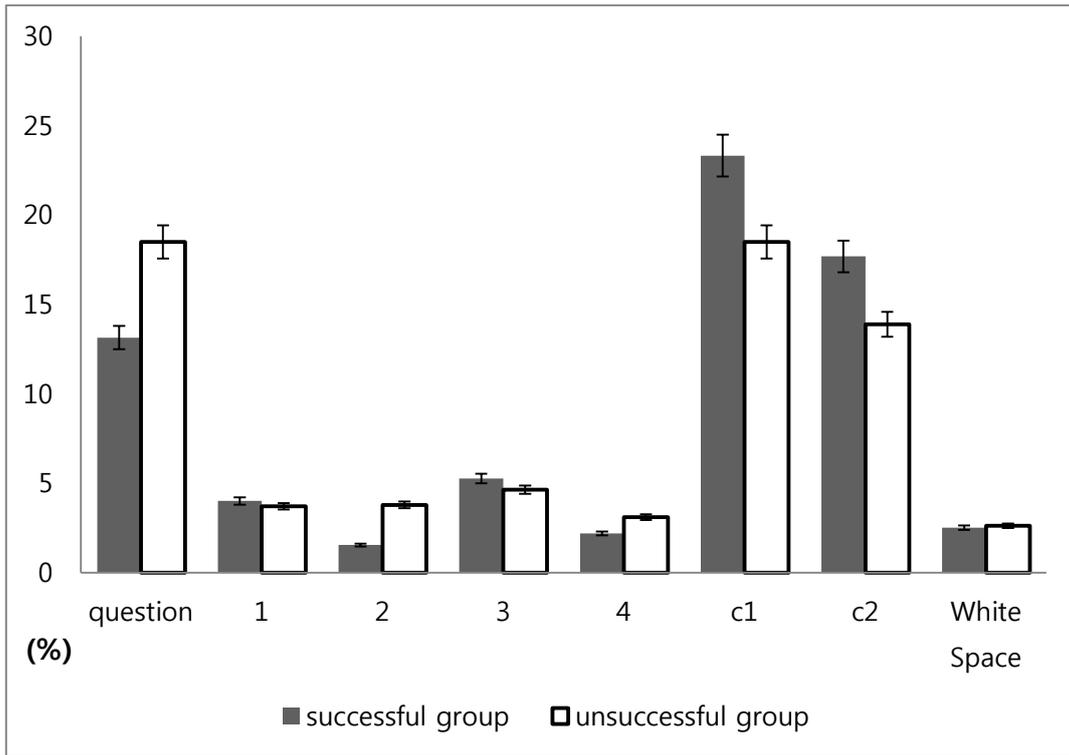
The average of the successful group's pupil size was larger than that of the unsuccessful group's pupil size in both problems. There was no change of the unsuccessful group's pupil size regardless of level of difficulty. Otherwise, the successful group's pupil size was larger in No.1 which was more difficult to students. It was considered that the successful group had different cognitive load depending on level of difficulty while the unsuccessful group had similar cognitive load steadily regardless of level of difficulty.



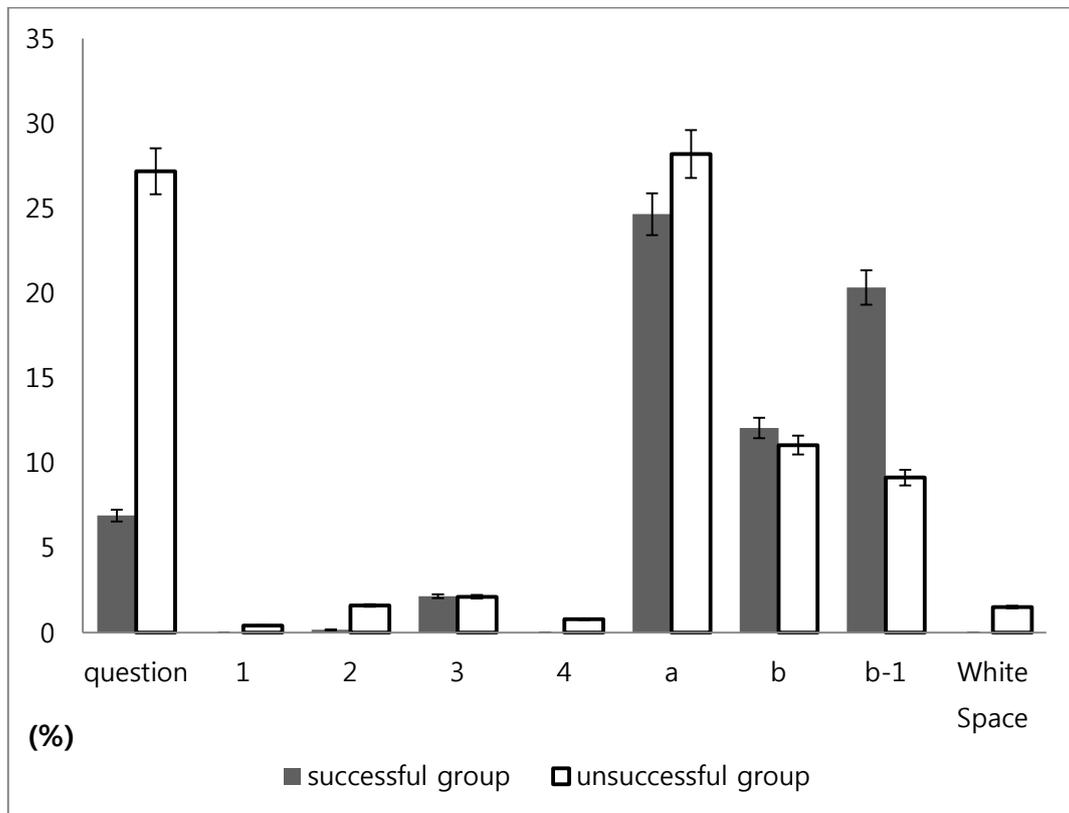
<Fig 4> The average of pupil size

### 3.2. Fixation time proportion (FTP)

In the first problem, the successful saw 'c1' and 'c2' which were clues to solve the problem longer by 4.83 percent and 3.8 percent. They stared at 'example 1' more than the unsuccessful by 0.29 percent and 'example 3' that was a right answer by 0.63 percent. Although watching all areas due to difficulty, the successful group's FTP on unnecessary areas was less than the unsuccessful group's and they focused on clues that helped to solve the problem. In the second problem, the successful group stared at 'b' and 'b-1' more than the unsuccessful group. Especially, they saw 'b-1' more by 11.19 percent; it means successful students did efficient eye movement because the problem could be solved in case of seeing 'b-1'. They never watched 'example 1', 'example 4' and 'white space' which was extrinsic to correct answer.



<Fig 5> FTP in No.1



<Fig 6> FTP in No.2

#### 4. Discussion

Larger pupil size of the successful during problem-solving of classifying presented in current study is thought of as higher cognitive load occurs to the successful (Holmqvist *et al.*, 2011; Kahneman, & Beatty, 1966; Van Gerven *et al.*, 2002). It may be because successful students have more prior experiences by similar activities (Kuhn *et al.*, 1995). As we cannot rule out the possibility of individual variation, difference of pupil size among individuals should be debated later.

In current study, when more difficult problems are given, variation of pupil size occurs to the successful group contrary to the unsuccessful. Members of the successful group may rely on problems in accordance with level of difficulty as appeared by alteration of their pupil size. On the other hand, we can predict that unsuccessful students count on their own cognitive model regardless of problems' difficulty from the result that there is no change of pupil size according to problems. Although not only external motive but also inner motive are demanded for problem-solving (Kim, & Lee, 2004; Bandura, 1992), unsuccessful students' inner motive that should appear as pupil size may not be caused easily (Holmqvist *et al.*, 2011; Kahneman, & Beatty, 1966). If we discover what makes unsuccessful students characterize and their cognitive strategy, it is helpful to enhance unsuccessful students' inner motive and cognitive model.

The higher FTP of the successful group on critical clues means their cognitive load of key points increases, because fixation time are direct and objective measures of cognitive load (Goldberg, & Kotval, 1999; Henderson, 1992; Holmqvist *et al.*, 2011; Tang & Pienta, 2012; Rayner, 1998). Moreover, during problem-solving, staring at clue which helps to getting the correct answer stands for effective perceptual progress; therefore, it can be construed as more useful information search takes place on classifying test of the successful group. In contrast, lower FTP of the unsuccessful group is regarded as inefficient perceptual progress. They not only need to find features of visual elements in bottom-up attention but also need a cognitive strategy that finds clue by purposive and active top-down attention.

Division between them allows us to differentiate the unsuccessful from the successful in classifying learning and develop teaching and learning strategies that educate classifying learning effectively.

## 5. Conclusion

The current study allows us to know dissimilarity between successful students and unsuccessful students during problem-solving of classifying through analyzing pupil size and FTP. Both pupil size and variation of successful students' pupil size according to level of difficulty let us recognize successful students have plentiful preliminary knowledge of classifying test as well as their cognitive load is changed depending on level of difficulty. In addition, it is discovered that unsuccessful students need to know an efficient cognitive strategy such as top-down attention. It is helpful to develop effective teaching and learning strategies in classifying with these conclusions.

## 6. Acknowledgement

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# A Buddhist Perspective: Environmental Sustainability for a Healthy Society

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## Introduction:

The present environment Crisis today is unprecedented in whole history of mankind: Pollution, deforestation, loss of bio-diversity, water depletion, land degradation and climate change. The interactions of living and non-living systems have been attempting to create a congenial human habitat but this balance has been removed by the excessive exploitation of natural resources.

## Environmental Sustain:

Now a day, human civilizations are facing not only environmental crisis but also a multi-dimensional crisis having intellectual, Socio-political, Economic, moral and spiritual tones. Renowned scientist and environmentalist Capra says:

*“It is a crisis of intellectual, moral and spiritual dimension; a crisis of scale and urgency unprecedented in recorded human history”<sup>2</sup>*

UNESCO has developed many environmental educational projects for a healthy society borrowing from the world’s religions and specially emphasizing on Buddhist Insights into environmental education. Taplow announced in 1992 that scientific knowledge, technological capabilities, spiritual values and cultural exchange of information are to promote sustainability of the environment, if Buddhist contributions are applied both in making a diagnosis of the malady, the potential prognosis for the future and presenting path ways for a recovery and healing of the environment.<sup>3</sup>

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<sup>2</sup> Capra, F, “*The Turning point, Science, Society and the rising culture*”, Simon and Schuster, New York, 1982. P.22

<sup>3</sup> Toplow, “*Court Declaration: A Dialogue on Cultures*”, UNCED, Buckinghamshire, 1992. P.26

If someone asks why? Then it is because, Buddhism offers resources for dealing with Multi-Dimensional crisis having moral overtones and other three ethical concerns which has global ethics, projection for the future generations and ethics beyond humans including human lives, animals, plants and ecosystems. According to Buddhism the reasons for the degradation are human greed (Lobha), human anger/aggression (Dosa) and Delusion (Moha). Being greedy (Lobha), one does not concern about others. Being aggressive one does not love, sympathize and care for others. Being lost or deluded one does not understand what is good and bad. If the objects of the man's greed, aggression becomes the nature then a non-violent and gentle attitude towards nature is impossible.<sup>4</sup> A monk named Sankicca says thus for Non-Violence:

*“I do not recollect any such wishes that these beings perish that they be destroyed or that they suffer anguish and pain”<sup>5</sup>*

Schumacher in his book ‘Small is Beautiful: A Study of Economics as People Matter’ said that Buddhism has environmental philosophy, sustainability and ethics covering nature, humans, animals and ecosystems as an inter-connected system.<sup>6</sup>

### **Buddhist Ecological Integration on Nature:**

Human can control nature to their advantages. Nature is essential as it provides resources, which are ample of human needs, Nature Provides unlimited Economic growth and material process. Human being can never be separated from nature because they are dependent and inter-connected to each other. Human has no way of surviving if the nature is destroyed for nature supplies every basic need of Human Beings.

Technology can solve some of the human although not all the human problems and if technology could provide ever solution for every problem then spirituality would not be necessary. According to Olsen, Dunlop and Lodwich, Social interactions need to be improved to mutual connectivity. Personal achievements should be

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<sup>4</sup> Aggañña Sutta, D.III, 80-98

<sup>5</sup> Theragatha, tr, “*Psalms of the early Buddhists*”, Mrs. C.A.F. Rhys Davids, PTS, London, 1903 – 1913. Verse: 603. Also see: A.II.p.72-73, Vin.II. 110. J.144.

<sup>6</sup> Schumacher, E, F. ‘*Small is Beautiful: A Study of Economics as if People Matter*’, ABACUS Sphere Books, London, 1971. P.37-47

developed to group achievement and large scale organizations are the key roles of their development.<sup>7</sup>

If the achievement of the Environment and its Sustainability is expected then the behavior of the entire society towards the Bio-Sphere must be transformed because

*“We are, what we think, all that we are, arises with our thoughts, with our thoughts, we make the world”<sup>8</sup>*

According to Se Silva, Buddhist perspectives on the Environment Crisis’s Alternative visions are based on 5 features known as:

- 01.Maintenance of Ecological integrity
- 02.The integration of Conservation and Development
- 03.Satisfaction of basic human needs
- 04.Achievement of Equity and Social justice
- 05.Provision of social determination and cultural diversity

To live in Peace, Harmony, and Happy with natural world for the survival and well-being of the human beings at the fittest. A new Ethic must be embraced with plants, animals, Human beings, non-human beings, beings we see and do not see and people we like and dislike. Without dividing the world into ‘Nature and Human’ Buddhism claims ‘Sentient being (Humans and Animals and other creatures with life) and Non-Sentient Beings (Plants, Environment, anything without life but connected to the living beings)’. Non-Sentient beings are greatly linked to human life, being irresponsible and violent towards them would have indirect moral and karmic Relevance according to Causal Theory perspective.

*“When this is, that is, from the arising of this comes the arising of that, when this is not that is not, from the stopping of this comes that”<sup>9</sup>*

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<sup>7</sup> Olsen, Marvin, E. Lodwick, Lora, G, and Dunlap, Riley, “*Viewing the World Ecologically*” West view Press, Boulder, Colorado, 1992. P.

<sup>8</sup> De Silva, Padmasiri, “*Buddhist Perspective on the Environmental Crisis, Pacific Ecologist*”, winter 2002, See Also “*Thinking Disorder*” Olsen, M, E. Lodwick, G.E. Dunlap, R.E. ‘*Viewing the World Ecologically*’ Westview Press, Boulder, New York, 1992.

<sup>9</sup> D, Dhammacakkapavattana Sutta, P.01, See also: S.V.420f. Vin.I.10f

The five precepts<sup>10</sup> of Buddhists provide a basic ethical appearance for the Buddhists to prevent the destruction of any life (Panatipata) to arising of any social conflict. In internal sense five precepts are for humans, animal life and the nature to reject violent and to cultivate the positive values of (Metta) Love and (Karuna) compassion.

To comprehend a non-violent attitude promoting more meaning to the current environment covering the irresponsible exploitation of natural resources, Sutta Nipata says the following.

*“Whatever breathing beings there may be, no matter whether they are frail with none expected, be they long or big or middle-sized or be they short or small or thick as well seen or unseen or whether they are dwelling far or near, existing or yet seeking to exist may beings all be of a blissful heart.”<sup>11</sup>*

Buddhists are advised to be cautious of even unintentional harm to any living beings and nature. Buddhists monks and Nuns are highly condemned for travelling during rainy seasons and are strongly emphasized to be aware of not injuring any sentient and non-sentient beings.<sup>12</sup> Worshiping the Bodhi tree is considered an important Buddhist practical ritual, because Buddha attained Enlightenment under the root of the tree. Veneration, gratitude and kinship with nature are part of the nature orientation in Buddhist teachings and disciplinary rules. The most important insight on Human-nature orientation in Buddha’s teaching and disciplinary rules connects directly with spirituality. Buddha asked the monks to go to Empty places, forest, woods, groves, meadows and foothills to meditate for spiritual solace.<sup>13</sup>

Buddhist scriptures does not directly talk about conservation, although the materials in Buddhist Scriptures, specially Buddhist Life styles and the development of Non-Violent and Compassionate life orientation, are essential to society’s concern with proper conservation and development. The Buddhist

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<sup>10</sup> 1. Not Killing any living beings to protect environment and maintaining a natural balance over the world ecology. 2. Not stealing which means not to harm the outer and inner layers of others life. 3. No Sexual Misconduct which emphasizes on respecting sustainability of a family and its dignity. 4. Not lying and being sincere which means to be honest, truthful, keep one’s own promises and using the language correctly. 5. Avoiding Intoxication which will bring loss of consciousness and alter our behavior and act in un-social ways.

<sup>11</sup> Sn.V. P.143-152

<sup>12</sup> Vin. I. P.137

<sup>13</sup> D. XXII. P. 375. Mahasatipatthana Sutta.

Human-nature orientation combines the inter-connectedness of all life, the inter-dependence of all beings and a network of relationship referring to Biotic Communities.

*“Nature is both random, contingent, blind, disastrous, wasteful, clumsy, ugly....but nature is also elderly, prolific, efficient, fit, exuberant, diverse, renewing in the midst of death”<sup>14</sup>*

A householder is expected to possess wealth, just like a bee that collects honey without harming the flower for everything is connected ecologically and socially.<sup>15</sup> Thich Nhat Hanh, who is well known as a ‘Socially Engaged Buddhist’ says:

*“We should deal with nature in the way that we deal with ourselves, harming nature is having ourselves and harming ourselves is harming the nature. If we know how to deal with ourselves and follow human beings, we would know how to deal with nature”<sup>16</sup>*

This is an important message which highly emphasize on the interdependence and the interconnectedness of all forms of lives starting from sentient to non-sentient.

### **Environment: Culture**

A very interesting emphasized theory in the present society is the modern Environmentalism which is based on environmental planning and conservation that demonstrates cultural context. Different societies try to demonstrate this in different ways considering their own traditional environmental knowledges. They are the shared values, shared assumptions, mutual understandings and goals demonstrates in the way of their life, rituals, arts, music, flexibilities and innovation embodied in their own particular traditional knowledge to preserve their culture, and according to IUCN Stockholm Conference in 1992 suggests that:

*“The government of all the nations should take in the account, the very large reservoir of environmental knowledge, philosophy and experience within local cultures and uphold the*

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<sup>14</sup> Rolston, Holmes, ‘Disvalues in Nature’ *Monist*, 75/2, 1992. P.08

<sup>15</sup> D.III. P.189

<sup>16</sup> Hanh, Thich Nhat, ‘The Individual, Society and Nature’, Fred Eppsteiner, ed. “The Path of Compassion: Writings On Engaged Buddhism”, Parallax Press, Berkley 1988. P.40-46

*idea that this knowledge may provide a significant basis for future environment management planning and policies.”<sup>17</sup>*

Buddhist teachings such as Arts, rituals, cultural stories like Jataka tales, chanting sacred suttas, being generous, metta, karuna, mudita and upekkha, build a very rich sustainable society rooted in culture. Whoever follows the teaching undergoes changes and does not have to worry about planning and conservation for; there is always an ‘Alternative Path for environmental improvement’.

Emphasizing only one particular culture in the nation might be contradictory to the notion of sustainable ethics where global citizens interact and share their inter-faith. Therefore the plea for ecological and cultural pluralism has to be considered to connect the essence of environmental justice. A sustainable society needs to respect with sincerity and authenticity so that the conflicts are reduced to lower degree and no destruction of traditions are supported. Buddhists therefore emphasize on inter-faith dialogue to avoid conflicts and to learn more about other cultures from other different faiths.

### **Environment: Education**

Environmental Education is the most useful strategy to gain a healthy and a practical environmental, ethical and sustainable society. Normally the state regulations and legislation are used to protect the environment but in this lost world, the treats of the environment are so powerful that Education and public participation is a must. People’s participation via education is a very valuable contribution, not only to the present crisis but also for the future.

A part from governmental organization, Non-Governmental organizations introduce a diverse formal and informal education promoting global, national and local society. These days most schools whether governmental or Non-Governmental support integrated courses on environmental issues by introducing faculties, arts, Science and ecology. When education and public participation take place, then there is always a possibility to develop a secular modern environmental ethics based on human welfare and human rights where religions in the world can

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<sup>17</sup> De Silva, Padmasiri, ‘*Buddhist Perspectives on the Environmental Crisis*’, Pacific Ecologist, Winter 2002, Also see about the “*thinking Disorder*”, Olsen, M.E, Lodwick, G.E, Dunlap, R.E, “*Viewing the World Ecologically*”, Westview Press, Boulder, New York, USA. 1992. P. 161-174.

offer profound platform for transforming environmentalism into human ways of life. Because all the religions are culturally roots in one or another, in stories, myths, poetry, arts and folk dramas.

Education leads the environment to think the right way. Just imagine an individual with Educational Background establishing himself/herself to think in the right way and transforming accordingly. Normally people think in the wrong way and we all often do this when we are depressed, worried and frightened then we change our attitude to be Pessimistic about the Society. But Buddha said, mind is the main cause of all un-satisfactoriness.

*Mind is the forerunner of (all evil and all good) states. Mind is chief; mind-made are they. If one speaks or acts with wicked mind, suffering follows one, even as the wheel follows the hoof of the draught-ox. But if one speaks or acts with pure mind, Happiness follows one, even as one's shadow that never leaves.*<sup>18</sup>

We sometime experience a feeling of isolation, separation and loneliness, lost, depressed, unloving, and unfair. When we judge the experiences of our own lives from the position of permanent separation from everything else then the outcome is fear, worry and anxiety. The way in which we perceive the world will fraught with an attitude arising from that fear and anxiety. Things will be completely different, if we educate our mind and avoid all unwholesome actions. Isolation, separation, loneliness, lost, depressed, unloving, unfair and even fear, worry and anxiety are mind made things. We have to educate our Mind through Buddhist Meditation.

Whenever we talk about Environment, religion is something that cannot be skipped, for its environmental knowledge, philosophy, experience, interdependent and connectivity.

To hope for a brighter environment, education is very important and therefore, Buddhism point out 10 important factors that are considered as the highest way of

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<sup>18</sup> Dhp Verse: 02. P.01

living taught in Mahamangala Sutta, when the Devas (Deities) approached Buddha and asked what the great blessing are.<sup>19</sup>

1. Not to associate with fools, to associate with the wise, and to honor those who are worthy of honor
2. To reside in a suitable locality, to have done meritorious actions in the past, and to set oneself in the right course
3. Vast-learning, perfect handicraft, a highly trained discipline, and pleasant speech
4. The support of father and mother, the cherishing of wife and children, and peaceful occupations
5. Liberality, righteous conduct, the helping of relatives, and blameless actions
6. To cease and abstain from evil, forbearance with respect to intoxicants, and steadfastness in virtue
7. Reverence, humility, contented, gratitude and the opportune hearing of the dhamma
8. Patience, obedience, sight of the Samanas<sup>20</sup> (Sanctified Ones), and Dhamma discussions at due seasons
9. Self Discipline, celibacy, perception of the Noble Truths, and the realization of Nibbana<sup>21</sup>
10. He whose mind does not flutter by contact with worldly contingencies, Sorrow less, Stainless, and Secure

As Buddhist followers, putting these great prosperous factors into our daily practice, would demonstrate oneself as a good Buddhist. Because these factors not only talk about Education and Public Participation, but also about Preservation and handling things with conditional situation.

### **Environmental Protection:**

To protect environment, it is necessary to practice the Buddhist Concept of ‘Oneness and Co-Existence’, ‘Compassion and life Protection’ and simplicity in

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<sup>19</sup> SnA.I.174, see also: S.VV.P.258-269. Khp.V.

<sup>20</sup> Samana is defined in difference context but here it means Religious types of people who do wholesome deeds

<sup>21</sup> Nibbana is the goal of all Buddhists.

their daily life. Kalyana Mitta<sup>22</sup> is very important while talking about protection for he/she shall be there to guide us to think positive.<sup>23</sup>

With wholesome speech, one abstains from frivolous talk, double-talk, and harsh speech. That is environmental protection from speech. Abstain from killing, stealing and sexual misconduct means protecting environment from unwholesome deeds. When one's mind is free of defilement with no jealousy and anger, one protects the environment by right mindfulness.

Protecting environment starts from our mind development because if our mind is at peace and healthy with compassion and environmental awareness, then we can save the earth due to the connectivity and interdependent of the world. A Mahayana Buddhist nun Chuehmen claim 12 advises to protect environment with inner beautiful mind.

01. Speak quietly – Do not disturb others
02. Keep the ground clean – Do not litter
03. Keep the air clean – Do not Smoke
04. Respect oneself and others – Do not commit violent acts
05. Be polite – Do not intrude upon others
06. Smile – Do not face others with an angry expression
07. Speak kindly - Do not utter abusive words
08. Follow the rules – Do not seek exemptions or privileges
09. Be mindful of you actions – Do not act unethically
10. Consume consciously – Do not waste
11. Be grounded – Do not live aimlessly
12. Practice Kindness – Do not create malice<sup>24</sup>

If we start to transform our minds, through discipline and wholesome deeds having concern and care for oneself and other, by following the above mentioned 12 advices, then we can hope for a fully protected environment here after.

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<sup>22</sup> Kalyana mitta means a good friend, who stands beside during the sad and happy moment of life, sharing and caring for each other.

<sup>23</sup> Bodhi, Bhikkhu (ed.) *'In the Buddha's Words: An Anthology of Discourses from the Pali Canon'*. Wisdom Publications, Somerville, MA, 2005. P. 109.

<sup>24</sup> Chuehmen, Bhiksuni, Ven, *'Cultivate our mind and save the Earth'*, The International Buddhist Conference on the United Day of Vesak Celebration, MCU, Bangkok, Thailand, 2009. P. 231. Article No. 17.

## **Buddhist Ethics:**

Ethics play an important role in the philosophy of Environmentalism which attempts to develop a spiritual perspective combining discipline in Arts, Science and other sub-fields like Bio-ethics. Ethic emphasizes the virtues that human beings need to develop their life style to live peacefully in the society. It also emphasizes duties that demonstrate the consequences of one's own action.

Buddhist ethics should be practiced with respect to sentient and non-sentient beings worldwide for a sustainable life style. Buddhist ethic claims that being ethical means being exemplary to the others by 'Virtuous' character such as **Compassion, Gentle, Humility, Mindfulness and Responsibility**.

**Compassion** means to extend one's compassion to all sentient and non-sentient beings, just like a mother who protects her only child at the risk of her life, so as the compassion should be practiced alike.<sup>25</sup> **Gentleness** means to be positive counterpart to the first precept of not harming or killing any sentient or non-sentient beings. **Mindfulness** means to maintain oneself individually or personally. **Responsibility** means to be active with the attitude of caring for natural Environment.

Buddhist Ethics both individual and social become meaningful and expressive only when freedom and free will are guaranteed for the achievement of the ultimate goal which lies beyond the causal conditioning of empirical phenomena.<sup>26</sup>

Buddhist ethical conducts are to build on the vast concept of universal love and compassion for all living beings. The Buddha gave his teaching for the good of many, for the happiness of many, out of compassion for the world. That is why, he sent the first 60 Arahants<sup>27</sup> to 60 directions to teach the dhamma that is good in the beginning, good in the middle and good at the End.<sup>28</sup>

According to Buddhism true ethical life aims at promoting moral, honorable and peaceful conduct abstaining from destroying life, from stealing, from dishonest dealing, from illegitimate sexual intercourse and engaging to help others to lead a

<sup>25</sup> Metta Sutta, see also: Sn.VV.P.143-152. Khp.IX.

<sup>26</sup> PhD, Gnanarama, Pategama, Ven, 'Essentials of Buddhism' Singapore, 2000, P.105

<sup>27</sup> Arahant means people who are fully awoken or people who has destroyed all defilement and who achieved liberation.

<sup>28</sup> Vinaya Pitaka (Mahavagga)

peaceful and honorable life. The promotion of above ethics will manipulate every place on earth to be friendly, peaceful, harmonious and pleasant.<sup>29</sup>

Buddhist ethics either physical or mental are all about self discipline in body, verbal and mind, self-improvement and self purification. It has nothing to do with beliefs, prayer, worship or ceremony.<sup>30</sup>

One good disciplinary discourse given by Buddha is Sigalovada Sutta, which draws our attention to show the great respect for the people in personal life, family and social relation.<sup>31</sup> Applying Buddhist Ethics, we move ourselves into harmony, stabilization and development in the society because these ethics mentioned above are expressions of humanity, a process of survival with wisdom and aiming towards human development.

Buddhist Ethics are meant to cultivate good wholesome deeds, emphasizes on equality, right action, pleasant speech and honesty. Therefore if these principles are taught into basic education among common people, the conflicts of enmity and hatred shall disappear and a harmonious and sincere society can emerge or develop building a strong solid relationship and purification of mind for the benefit and well-fare of the society in order to improve social morale promoting peace, safety, sustainability and even helping to create a healthy develop world.

### **Allowing Others the Right to Differ:**

If an individual lives alone at the corner of his/her home, then that person will not have any problem with differing opinions but once that person chooses to live in the society, she/he must learn to respect and allow other people to share and experience every one's opinions, although they do not conform the same opinion.

We are living in a hunting world, where the strong takes advantages of the weak and rich takes advantages of the poor. As a Buddhist we should stop acting thus. If we cannot accept others differences then we have to learn why. We should express our opinions gently and politely without imposing our personal views by forces which would only create conflict instead of creating a peaceful society.

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<sup>29</sup> Shakya, Ratana, Manik, '*Buddhist Education for Recovering the society*', Global Recovering: The Buddhist Perspective UNDV Conference Volume, 7<sup>th</sup> International Buddhist Conference on the United Nations Day of Vesak Celebration 23-25 May 2010, Thailand. P. 179

<sup>30</sup> Rahula Walpola, '*What the Buddha Taught*', the Gordon Fraser Gallery Ltd, London and Bedford, 1959. P.49

<sup>31</sup> D.I. P.31, Sigalovada Sutta

Differences might be able to arise in any society in the world but we have to learn those differences and have to develop a mutual punctuation to build a peaceful society to live in harmony being together with the differences. Whatever it is, Buddhism introduces four sublime states which manipulate the society into a peaceful society to live. They are as follow:

- 1) Metta (Loving-Kindness)
- 2) Karuna (Compassion)
- 3) Mudita (Appreciative joy)
- 4) Upekkha (Equanimity)<sup>32</sup>

**Metta** (Loving-Kindness): Metta is a multi-significant term meaning loving-kindness, friendliness, goodwill, benevolence, fellowship, amity, concord, inoffensiveness and non-violence.<sup>33</sup>

**Karuna** (Compassion): It means to diminish the suffering of others. When individuals experience enlightenment, they report that all beings are known as one. Therefore, it is natural to extend compassion to everyone, because we are all one. As we help others and aid them in their healing process, all beings benefit, even us.<sup>34</sup> Compassion is an important virtue in Buddhism, where a person is advised to use it in his/her meditative practice where he/she must envision extending compassion gradually in all directions and to all the beings on earth.<sup>35</sup>

**Mudita** (Appreciative Joy): Mudita means finding joy in the happiness and success of others. It mostly requires a deliberate effort to identify oneself with the joys and successes of others.<sup>36</sup>

**Upekkha** (Equanimity): Upekkha is the quality of being emotionally calm, balanced and even, especially when confronted with difficult situations.<sup>37</sup> Buddhist

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<sup>32</sup> Mahathera Narada, Venerable. *The Buddha and His Teachings* The Corporate Body of the Buddha Educational Foundation, Taipei, Taiwan, 1998. P. 489-490.

<sup>33</sup> Acharya Buddhakkhita, *MettaMetta: The Philosophy and Practice of Universal Love*, <http://www.accesstoinight.org>, 1995–2013, Retrieved: 17/09/2013.

<sup>34</sup> Kathie Lipinski, *The Meaning of Karuna: The International Center for Reiki Training*, <http://www.reiki.org>, 1990-2013, Retrieved: 17/09/2013.

<sup>35</sup> Sahni, Pragati, Dr. *Environmental Ethics in the Jataka: Further reflections*, Buddhist Approach to Environmental Crisis, International Buddhist Conference on the United Nations Day of Vesak Celebrations, MCU, Bangkok, Thailand, 2009, P. 138

<sup>36</sup> Nyanaponika Thera, Natasha Jackson, C.F. Knight, and L.R. Oates, *Mudita: the Buddha's Teaching on Unselfish Joy*, <http://www.accesstoinight.org>, 2005–2013, retrieved: 17/09/2013.

in terms of equality talks about freedom, Freewill and Responsibility. Therefore, freedom is to be understood as freedom to choose any moral or immoral action whether good or evil, freewill as purposive willingness and responsibility is one's own responsibility for the retributive effect of their action. Therefore, accepting others idea in respect of individual's moral behavior shows the freewill and freedom of choice and the corresponding responsibility as essential constituents of the path of true realization. Everyone's opinion is precious for him/herself. We should provide chances for everyone to seek their own rights. Since our birth to death, we defend ourselves with our personal opinion and due to the un-acceptance of differences, we get fight so therefore to avoid conflict, we have to be diligent to be the protector of ourselves, and therefore dhammapada says thus:

*“Oneself indeed is one's savior, for what other savior there be?  
With oneself well restrained one obtains a savior difficult to  
find”<sup>38</sup>*

Buddha's allowance of freedom of thought and tolerance is surprising to the students of the history of religions. Once, upali, a prominent and wealthy householder, in Nalanda who was a well-known lay disciple of Nigantha Nātaputta<sup>39</sup> was purposely sent to meet Buddha by Mahavira himself and to defeat Buddha in the concept of Karma for Buddha's views were different from Mahavirā. But unexpectedly after the discussion was over, upali was convinced that the views of the Buddha were right and his master's views were wrong and thereafter he begged the Buddha to accept him as a disciple (Upasaka). But Buddha asked him 'to reconsider it and not to be hurry, for considering carefully is good for well-known man like him'. When upali pleaded again and again then Buddha advised him to continue to respect and support his former religious beliefs as he used to.<sup>40</sup>

If the teachings of any faith are true and experimented and if they can solve people's problems, beneficial and helpful for the society then it is not so necessary

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<sup>37</sup> David N. Snyder, Ph.D, 'Upekkha', The Dhamma Encyclopedia, <http://www.dhammadawiki.com>, modified on 6 August 2011, Retrieved: 17/09/2013.

<sup>38</sup> Dhp Verse:160

<sup>39</sup> One of the famous teachers during the time of the Buddha.

<sup>40</sup> M.II. P.56, Upali Sutta

to know, which religion said that. It is necessary to follow that teaching and get the best benefit out of it. Even Buddha himself said this:

*Oh Monks, this view which is pure and clear, if you cling to it, if you fondle it, if you treasure it, if you are attached to it then you do not understand that the teaching is similar to a raft which is for crossing over and not for getting hold of.*<sup>41</sup>

Therefore Buddha's teaching is mean to carry man to safety, peace, happiness, tranquility and the attainment of Nibbana, the supreme goal of all Buddhists.

For there to be peace, the heart and mind which form the basis of human action should be at rest because most of the turmoil we suffer from is due to our inability to control our mind. Each time our mind comes to contact with sights, sounds, tastes, smells and physical contacts causes Un-satisfactoriness. It also causes bodily, tension in numerous physical illnesses. Only by developing one-pointedness the ability to keep the mind from constantly wandering, we can free ourselves from much of these problems and have more inner peace and physical well being of oneself and others.

### **Constant Reflection on Kamma (Action):**

Kamma is whatever we do, if we do something good, we get good result. If we do something bad then we get bad result. Kamma is something we cannot escape. Until we have achieved our result. Wherever we might be, under the water, or inside the cave or above the mountain, or even next birth or birth after next, we cannot escape from Kamma. Dhammapada<sup>42</sup> Yamakavagga says Thus:

*Here he is happy, hereafter he is happy; one who performs meritorious deeds is happy in both existences. Happily he exclaims: I have done meritorious deeds." He is happier still when he is reborn in a higher world (suggati).*<sup>43</sup>

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<sup>41</sup> M.I.P.260, (PTS), See Also Rahula Walpola, 'What the Buddha Taught', the Gordon Fraser Gallery Ltd, London and Bedford, 1959. P.11

<sup>42</sup> Dhammapada is simply known as the Handbook of all Buddhists and none Buddhists. Which contains moral advises for life.

<sup>43</sup> Dh.p. Yamaka Vagga, Verse: 18, P. 20-22, Idha nandati pecca nandati-katapunno ubhayattha nandati, punnam me katanti nandati-bhiyyo nandati suggatim gato.

If we do good things, if we are kind and generous, we constantly reflect that we have helped someone; we did something good for the others, off course we have to reflect without expecting something in return because expectation only brings more unhappiness in life.

If we do bad, if we lie, gossip about others, if we kill any living beings, if we steal, if we do misconduct, frequently scold others, use harsh speech at others and entangle with immoral behavior then every reflection over our own experience in the society makes us sad and unhappy. That is why we do not even want to remember them.<sup>44</sup>

Every individual in the society must keep in mind that whatever they do, whether good or bad, does have its own result and no one can escape from it unless one's wholesome action is greater than unwholesome action<sup>45</sup> which turns to be ineffective kamma.

So whatever you are conscious of right now. That is kamma. You can witness the results of your own life. Confusion, happiness, doubts, worries, fears and desires come from having been born, from having performed particular actions and from having been conditioned by our society to believe, accept or fear according to its value.

When talking about kamma and its result 'Vipaka'. It is not necessary to expect something immediately out of whatever good actions you do like donating a home for homeless, practicing metta instead of being harsh, giving food to the poor, providing clothes, dwellings for the poor, etc. Kamma will take its place according to the four karmic functions<sup>46</sup>. When you know certain things are unwholesome and wrong then give them up. When you know certain things are wholesome and good then follow them and practice accordingly.<sup>47</sup>

Modern society contains numerous types of people, where some are unhappy, depressed, seeking happy feeling and wanting to get away from Un-pleasant

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<sup>44</sup> Sumedho, Ajahn, *The Mind and the Way Buddhist Reflections on Life*, Wisdom Publications, Somerville MA 02144, USA, 1995. P. 50-51.

<sup>45</sup> Bhikkhu, Aggacitta, Edi. Geok Liew Leong. *Dying to Live: Role of Kamma in Dying and Rebirth*, Sukhi Hotu Dhamma Publications, Penang, 1999. p. 35.

<sup>46</sup> Immediately Effective kamma, Subsequently Effective kamma, Indefinitely Effective kamma and Ineffective kamma.

<sup>47</sup> Rahula Walpola, *What the Buddha Taught*, the Gordon Fraser Gallery Ltd, London and Bedford, 1959. P.03.

movements. That is the transformation of individuals in the society, where they try to change their attitude being tired of their previous actions. Buddha said that any action that brings adverse consequences to the doer as well as others in the society and produces overall suffering is wrong and should be avoided.<sup>48</sup>

The teaching of the Buddha draws our attention to causal origin of such human behavior that is generally productive. Regarding the origin of the unwholesome behavior, the Psychological and causal explanation provided by the Buddha are (Lobha) Greed, (Dosa) Hatred, and (Moha) Delusion/Lost.<sup>49</sup> As long as we are trapped with these three origins, we will always perform something unwholesome. The root of all unwholesome is ignorance (avijjā) and false views (micchā ditthi). It is an undeniable fact and as long as there is Doubt, perplexity, and wavering, no progress is possible.<sup>50</sup> Therefore clear your doubt by reflecting on the triple gems known as Buddha, Dhamma and Sangha.<sup>51</sup> And follow the advice given in Dhammapada such as:

*Sabba pāpassa akaranam – Kulalassa upasampadā,  
Sacitta pariyodapanam – Yetam buddhāna Sāsanam.*<sup>52</sup>

“Avoid all types of unwholesome deeds, engage to do wholesome deeds, purify your mind.” This is the teaching of all the Buddhas. Therefore people frequently should be aware of the activities they are performing in their daily life.

### **Conclusion:**

The Buddhist ideas and practices like life Transformation, loving kindness, compassion, appreciative joy, indifference, and precepts, way of life, culture, causality, non-violence and humanity are to be propagated to all levels of the society in the world without the consideration of colors, race and differences. Because education is the basic universally accepted floor and one of the essence instruments to educate the future generations and to benefit the people with global perspective. The above mentioned Buddhist teachings are made known in main

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<sup>48</sup> M. Vol. I, P.415, Check Also. M. Vol. II. P.114.

<sup>49</sup> A. Vol. I.P.189.

<sup>50</sup> Rahula Walpola, ‘What the Buddha Taught’, the Gordon Fraser Gallery Ltd, London and Bedford, 1959. P.03.

<sup>51</sup> Buddha, Dhamma and Sangha are the three refuges of Buddhism, known as: Buddhānānāṃ Gacchāmi, Dhammānānāṃ Gacchāmi and Saṅghānānāṃ Gacchāmi. “I take refuge in Buddha, dhamma and Sangha”.

<sup>52</sup> Dh.p. Verse 183, P. 190

stream of education due to its rationalistic ideas sustaining Environment, Ecological Integration on Nature, Culture, Environmental Protection, Ethics, importance of Allowing Others the Right to Differ and Constant Reflection on Kamma. Then only after educating people globally we would success to sustain our Environment for a better place to live in peace and harmony.

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Addressing the Challenges of Students with Disabilities in Foster Care

Submission ID # 1095

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Topic Area: Other Areas of Education

## **Poster Session Proceedings Submission ID # 1095**

This poster presentation will provide pertinent information regarding a unique population of at-risk students who are identified as having a disability as well as who are concurrently in the foster care system. Emphases will be placed on statistical data, historical legislation, issues/barriers in service provision, and implications for future research for children and youth with disabilities who are currently serviced, may enter, or will be exiting/transitioning from the foster care system.

### **Abstract**

There are approximately 600,000 children in foster care where 70 percent, are school age (Emerson & Lovitt, 2003). These children and youth are approximately 10.6 years of age on average (Jackson & Muller, 2005). Fifty percent of young children in foster care have been diagnosed with speech or language delays, emotional behavioral disorders, and learning disabilities as compared to three percent of the general population (Scarborough, et al., 2004; Stock & Fisher, 2006) whereas an average of 40 percent of children in foster care also receive special education services (Geenen & Powers, 2006a; van Wingerden, Emerson, & Ichikawa, 2002). Additional efforts are now required to provide timely identification, provision of special education services, and other supports for the growing population of children and youth with disabilities in foster care. Because recent legislation has been passed to ensure that this at-risk population of children and youth are receiving appropriate social services and comprehensive education, implications for future research and supports are also needed. The central focus of this presentation will provide educational programming and necessary research directions essential in improving outcomes and the quality of life for this vulnerable population.

## **Edugaming: Keeping the Quiz Out of Educational Games to Create Effective Learning Environments**

### **Presenters:**

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**Topic Area:** Higher Education, Secondary Education, Elementary Education, Cross-disciplinary areas of Education, Other Areas of Education

**Presentation Format:** Workshop Session

**Description:** Too many educational games rely on a quiz format, and don't encourage deeper exploration. Games excel at having players do the same thing repeatedly, creating an environment where practice and exploration is expected, thus encouraging learning. The approach presented in the "Edugaming Framework" eschews the quiz, facilitating the use of educational content as gameplay and resulting in engaging and effective educational games. Come to this workshop to learn this approach to educational game design.

## **Edugaming: Keeping the Quiz Out of Educational Games to Create Effective Learning Environments**

**Mary Rasley and Steve Weitz**

### *Abstract/Workshop Summary:*

In this interactive workshop, participants will have a hands-on opportunity to design tabletop games that provide engaging educational content. The goal of these games is to have the player utilize the educational concepts being reinforced in the actual game-play, causing the player to think about and apply the concepts repeatedly through play, leading to a deeper understanding of those concepts. No computers will be used in this workshop. This workshop's content is built on work funded through Advanced Technological Education (ATE) grant #1003154 *Merging Computer Science and Digital Arts: an Interdisciplinary Gaming and Simulation Curriculum* from the National Science Foundation.

The workshop will begin with a short presentation on game design and education, focusing on why quiz-based games are ineffective as educational tools. This presentation discusses the "Edugaming Framework" which takes educational concepts and creates games from them. The focus of this framework is in keep quizzing out of games, while ensuring that the content itself becomes the core gameplay element in a game.

After this short presentation, the exercise will begin. The exercise will use a basic shell of a poor educational game. Participants in the workshop will break into groups and, using this shell and the "Edugaming Framework" concepts, redesign the game into one that is more effective for learning. Participants will be guided in this redesign by a handout (included below), which includes questions to guide their thinking when making changes to the game.

At the end of the workshop, groups will present and discuss their design decisions, demonstrating the changes they have made to the game. This concludes with a summary of the "Edugaming Framework" and the concepts that allow game to be used as effective learning tools.

### *Workshop Goal:*

Participants will learn the Edugaming Framework and how to apply it to game creation through an exercise in which they will redesign a poorly crafted educational game.

# **Edugaming: Keeping the Quiz Out of Educational Games to Create Effective Learning Environments**

**Mary Rasley and Steve Weitz**

## **“Thinking outside the game” exercise sheet:**

Using the game that we have provided for this exercise and thinking in terms of the Edugaming Framework, work in groups of 4 or 5 people to redesign the game. Use the following questions as a guide.

### **Player Movement**

- What are the consequences of making dice determine the way the player moves around the game?
- What other means beyond dice could be used to dictate movement?
- Are there ways we can allow the player to have control over their movement?

### **The Game Board:**

- What are the consequences of having a single path that the player uses to move around the game?
- What changes could be made to the board?
- What changes could be made to the board to allow the player more control over the path they follow in the game?

### **The Cards:**

- When a player draws a card, what outcomes could occur?
- What other options could they be given at that point?
- Is there something else the card could provide to the player?
- Can the question on the card be broken down further into separate elements?

### **Resources:**

- In the current game, is there anything that a player has at the end of the turn that they did not at the beginning of the turn (typically referred to as “collecting a resource”)?
- What things are the players doing during a turn that could result in collecting a resource?
- Are there additional actions that can be added to acquire resources?

### **Player interaction:**

- How are players interacting in the game?
- Are there other ways the players could interact with each other?
- Are there actions that one player can take on his or her turn that influences or is influenced by another player’s turn?
- Can the social aspects of the game be enhanced?

### **Collaboration or Competition:**

- Does the game present opportunities for collaboration or competition? If so, how?
- Which aspect makes gameplay more fun/interesting for this game: collaboration or competition?
- Are there mechanics we can introduce that would enhance collaboration or competition?

# **Edugaming: Keeping the Quiz Out of Educational Games to Create Effective Learning Environments**

**Mary Rasley and Steve Weitz**

## **Explanation of the Edugaming Framework**

### **What existing educational games do not do well and why**

Games excel at having a player do the same thing over and over again. In an educational game, the goal is to encourage learning by providing opportunities in the game for players to practice what they have learned. Games create an environment where practice and exploration is expected. The engagement that comes through a game allows a student to explore the topic in a “safe” environment where they can try various solutions to problems and attempt a variety of strategies to “win” the game. Effective games create an environment of “flow” as described by Mihaly Csikszentmihalyi (Csikszentmihalyi, 1990), which results in complete immersion in an activity.

Quiz games do not do this. While quiz games do have repeated activities in them, those activities are unrelated to the educational content. For example, a Jeopardy-style game has players “buzzing in” to try and answer a question first - enforcing the idea of speed and timing. However, the actual questions/answers are fact based, and are inherently only something the player deals with once. This reinforces knowledge at the “remember” and “understand” levels of Bloom’s Revised Taxonomy (Anderson, 2001). They do not call upon the player to apply that knowledge in a meaningful way (the higher levels of Bloom’s Taxonomy). Common educational board games, where a player moves over squares on a board, draws cards and answers questions, has a player repeatedly rolling dice, moving a player piece, and picking up a card - all activities performed multiple times - but the actual question on the card is only seen by the player once. Having the player see and answer these questions multiple times would also not be beneficial, as the player would know the answer to that particular question, removing any challenge from the game.

### **What well-structured games can accomplish**

Well designed and structured educational games can support Thorndike’s original and amended Laws of Learning (Thorndike, 1922). By their very nature, they encourage “motivation” or readiness in the student by engaging them in the activities presented in the game. By having a player perform the same activities in subsequent turns, the game provides “exercise” or repetition which results in “feedback” or skill improvement through the practice of the activities and concepts employed in the game. Successes achieved in the game provide “effect” or internal reward which encourages the student to play the game again. The experience of playing an educational game may be viewed by the player as memorable thus providing “intensity” or an external stimulus. Finally, games provide “freedom” to the player via choices in the game, which allow them to progress in the manner they want, placing them in control of the learning situation.

The goal for an educational game should be to have the content itself form the play; rather than asking questions to be answered, the players should be utilizing the content as a means to progress through the game. In this way, the game presents an opportunity for players to immerse

themselves in the content. Players can use what they have learned and apply it to reach goals throughout the play of the game. This approach allows an opportunity for the game to involve the player in learning the concepts at the higher levels of Bloom's Taxonomy. The game itself allows the player to make mistakes and learn from them with no concern for grades. This type of game design allows for repeated play and multiple outcomes, which draws the player back to play the game again and again. This gives the student an intrinsic motivation to play, as he or she is challenged to play the game repeatedly to achieve a "win" in the game. Repeated play of the game results in practice with the concept rather than mere memorization of an answer.

### **The Edugaming Framework**

To facilitate the creation of games that foster a deeper learning of educational content, the Edugaming Framework was designed to break down content into core elements that can form the play in a game. The first step of the framework is to identify the concept or learning that needs to be reinforced through the game, focusing it down to something that is highly specific. Educational games frequently try to do too much within a single game – often asking questions on a variety of related topics, because these topics will likely appear on a test. However, this does not lead to understanding a concept at a level that is useful in real world scenarios. Since games excel at having players practice an activity, the goal is to tightly focus the game on a single concept in order to allow the best possible reinforcement. For example, rather than emphasizing "basic math skills" in a game, one can use "arithmetic" as the concept. However, that can be further narrowed to addition, subtraction, multiplication and division. At the beginning of the design process, it is going to be difficult to take all of these into consideration, so narrowing further to focus upon addition alone would provide a simpler starting point. Once the foundation of the game has been developed, incorporating other elements of arithmetic beyond addition will become easier.

Breaking the concept down into its smallest component parts is the second step of the framework. Concepts often contain pieces within them that work together systemically. By identifying those pieces and analyzing them so that they cannot be further reduced, individual components are uncovered. These components can then become elements of the game. Systems thinking is important in this step. Through consideration of the components and their interactions, the designer can begin to visualize how a good game mechanic can emerge from the pieces.

Often, individual components can be exposed from the same questions that would be asked in a traditional, poorly-designed educational game. With the addition example given earlier, a quiz question asking the player to give the answer for an equation would reveal components. The equation " $5 + 2 + 8 =$ " reveals six components: a 5, a 2, an 8, two addition operators and an equal sign. This can actually be reduced into two components for use in the game. The 5, 2 and 8 are all numbers, meaning that "numbers" is one component that is integral to the game. To be more specific, they are positive, whole numbers - if it is important to reinforce negative numbers, decimal points, or other aspects, those too could become components, but are not for this example. The act of adding, represented here by an addition sign, is another component. The equal sign is merely there to indicate that utilizing numbers and addition will reveal an answer - this is understood by simply having the numbers and the addition operator so the equal sign is implied by the problem.

With the component pieces isolated, the third step requires the designer to examine those elements to find the relationship between them that is important to reinforce. Obviously, educators

do not teach simply for the knowledge itself, but rather as a foundation to utilize the knowledge for practical purposes. Continuing with the addition example, an understanding that numbers can be combined is critical to many real world applications. The fact that numbers can be added together is clear, but the true importance comes from the knowledge that numbers can be combined and thus manipulated to form a separate value. Ultimately, the manipulation of numbers at this simple level is the important relationship with these components. This direct manipulation of numbers should be the activity the player is doing throughout the game in order to reach the game's goal, rather than answering questions. It is important to note that while the components and their relationships are fairly obvious in the addition example, the same technique works in nearly all areas. If the components are not clear, additional thought must be given so that the educational goal is identified.

Once the important relationship is determined, it can be used to form the backbone of the game in the fourth step of the framework. The backbone of the game needs to be an activity with no single right answer. At no point in time should the player be asked a question that has only one possible solution. The goal of this step is to create a basis for a game that causes the player to face choices in order to progress through the game. These choices are based on solving problems within the content area. This forces the player to think through the problem and consider multiple approaches to determine their own solution. Problem solving within the content area becomes the Core Game Mechanic.

A game mechanic is any rule or combination of rules within a game that form different game actions; sometimes these are actions that the player takes or actions that occur automatically as the game progresses. Moving a player piece to a space on a board based on the number rolled on dice is a mechanic. Drawing a card is a mechanic. Rotating and placing pieces so that they interlock within a puzzle game is a mechanic. A core game mechanic, such as that established in step four, is more specific and more important, however. Core game mechanics refer to the mechanic that is most crucial to the game, and that which all other mechanics should in some way help to reinforce. Typically, core game mechanics are an action the player performs - an action that is done throughout the game and is the main focus for the player. With the addition example, the core game mechanic involves a continuous combination of numbers via addition. No specific equations with singular solutions are presented to the player; instead, the player obtains and combine numbers to achieve a goal. There are multiple ways that this can be achieved. Perhaps the player chooses directions to move on a board, landing on numbered spaces, and then adding the numbers on each space to reach a goal. Perhaps the player draws cards with numbers on them and combines those numbers during the game. There are many options here, all revolving around number combination. While the basis for the core game mechanic is established with step four, in order to have the core game mechanic be fully supported, additional game mechanics need to be created via step five.

Building the mechanics that form the game is the fifth step of the framework. Regardless of the core mechanic that is exposed in the fourth step, numerous questions must be answered in the fifth to actually build the game. Other aspects of gameplay must be considered at this point. The creation of a game results from asking questions. In the addition example, how are the numbers acquired by the player? Do the numbers get immediately combined, or can they be saved for combination at a later time? What goal is the player trying to reach? If numbers are being combined, should the goal be a specific value that is reached? If the goal is not a value to be

reached, but rather a physical space on a board, how does the combination of numbers help the player reach that goal? Regardless of what the goal is, how does the combination of numbers allow the player to reach that goal? It may become clear through this process that additional mathematical concepts are needed to strengthen the manipulation of numbers - for example, allowing for subtraction to be used would give players more options to manipulate their numbers. This would also raise additional questions as to how subtraction can be implemented in the game. Step five of the framework is the largest of the steps, requiring the most creativity and experimentation.

Finally, step six revolves around refining the game. As designers create different rules for a game and modify them, it is important to actually play parts of the game to ensure they work properly and to discover new questions about how the game should function. Having a list of rules and imagining how the rules work together can only bring the design so far - it is necessary to play the game to see if it is engaging, to find elements that could be improved, and to ensure that the various parts of the game interrelate. This is all done via iterative playtesting. After creating parts of the game, it is played, problems are found, ways to fix those problems are determined, the changes are incorporated, and the steps are repeated. Iterative playtesting is so vital to the game creation process that it has been highlighted as the sixth and final step of the framework: build, playtest, iterate.

By following the Edugaming Framework, educational games can be developed that avoid quizzing, relying instead on a high level of incorporation of content into gameplay. This will give students who play the game practice with the important aspects of the concepts, resulting in a deeper understanding of the content. Ultimately, this will allow them to answer the same types of questions that may have previously been asked in a traditional test - the difference being that the correct answer comes from true insight, rather than memorization. It also encourages more engagement of the player, so that more practice time is invested in the concepts being taught.

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## **Place-Based Science Education for Five Elementary Schools in Rural Thailand**

Science Education

Paper Session

This research was designed to study the effect of a professional development program in place-based science education on teacher and student learning in rural elementary schools in Thailand's northern Lampang province. The key findings suggested that teachers were able to improve their science teaching by connecting science to the local knowledge in the community.

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### **Abstract**

This research was designed to study the effect of a professional development program in place-based science education on teacher and student learning in rural elementary schools in Thailand's northern Lampang province.

A professional development program in place-based science education was subsequently designed and implemented in 2010 to provide a support network for teachers to develop and teach lesson plans that connected science to the local community resources and daily lives of the students. The study focused on five schools, seven teachers, and their students from diverse cultural backgrounds who spoke multiple languages.

The data examined in this study included principal, teacher, and student interviews before and after training; teacher lesson plans; researcher, peer, and outsider observations of teaching; student work and projects; standardized student test scores in science; and interviews with parents. The key findings suggested that teachers were able to improve their science teaching by connecting science to the local knowledge in the community. Because it was very important to connect science taught in the Thai National Curriculum with local funds of knowledge, the support of the administrators and community was critical to the success of the place-based science education lessons.

## **Introduction**

If students can make the connection between science knowledge and real life it is believed that they will be able to learn about science more efficiently and effectively (AAAS, 1990). To reiterate, this research project was designed to determine the effects of a professional development program in place-based science education on teacher and student learning. In other words, could place-based education techniques enable teachers to help students make these connections in just such a manner? A study was designed to understand and evaluate this approach in Lampang Province, northern Thailand. The program involved the researcher working with elementary school teachers in five rural schools to develop a model place-based science curriculum to study teachers' and students' learning performance in place-based science education classrooms.

## **Background of Study**

In Thailand, there are few examples directly referred to as place-based education but there are programs that are similar where in-service teachers connect local knowledge into the curriculum and lesson plans. For example, Bartlett and Jatiket (2003) reported that Manas Burapa, an elementary teacher from Wat Nong Moo School in the Nakhonsawan province (in the center of Thailand close to Bangkok), developed lesson plans by using rice fields as a classroom to teach about ecosystems. Although other teachers questioned whether students could pass the tests, Burapa proceeded with lessons anyway. The teacher believed that students learn from real experiences through hands-on learning in the local community. Rather than learning from a curriculum specified book, the students used the rice field as a classroom to teach about insect life cycles, the nitrogen cycle, and the difference between organic farming and farming with insecticides and chemical fertilizers.

During the learning processes, the students were able to talk about and come up with local stores of knowledge about the rice fields. The teacher was able to see that students learned by connecting scientific knowledge and local knowledge that made learning more meaningful and applicable to real life. Moreover, the rice field lessons helped the students connect with the local farming practices that are part of their intergenerational lifelong learning. The teacher's assessment of this project suggested: (1) the successful involvement of parents and local community members in school activities (e.g. guest speakers, helping students analyze problems

in the rice field, and sharing experiences; (2) students who learned how to plan projects, write, and record reports about the ecosystem; (3) improvement in student achievement on paper tests and participation in the activities; and (4) students who learned about ethical responsibility on how to care for the local environment. The teacher learned from an assessment by his students who said they enjoyed learning outside the classroom and learning more about local insects and ecosystems. Other students said they wanted to learn outside the classroom and hoped their teacher would teach this style forever because the activity made them interested in the subject. Although it was hot in the rice fields, the students enjoyed the freedom to learn more than in a classroom. Similar expressions were also expressed in this study. The researcher reported on these sentiments as well as reporting positive student academic outcomes resulting from the use of the natural environment as a classroom.

Most rural schools in Thailand have inadequate in-classroom resources to fulfill their teaching mandates, lagging far behind their urban school counterparts. On the other hand, they do have a rich inventory of rice fields and open spaces immediately adjacent to their schools that may be used as outdoor classroom space, if teachers and schools decided to use them for that purpose. In the classroom, the teaching and learning tools supplied are neither sufficient nor up-to-date, and they do not meet student needs. Scientific principles are presented hypothetically in isolation from culture – an approach that is beyond everyday students' needs. The communities in rural school areas are populated by farming families that practice traditional agriculture-based farming methods that have been passed down over generations. Because of this, local residents have little interest in learning and applying science unless they see it as applicable to their everyday practices. Rural elementary teachers are generally not well trained and not proficient in teaching science. For these reasons students in these areas are unable to learn science concepts effectively or to achieve impressive test scores in science.

Other challenges have arisen from these schooling deficiencies. When teachers neglect to adapt the curriculum to the community, students lose their connection to the community, and many move away from rural areas and go to the city to study or work and do not return (Klechaya & Chinn, 2009; Chinn et al., 2010); and in doing so all of that energy, effort, and time devoted to schooling is lost as well. While it is understood that some students might stay and others might leave their rural communities independent of the schooling they receive, this study assessed whether education played a role in students understanding, respecting, and caring for their community.

In a pilot study conducted by the researcher using place-based education techniques, primary school students investigated sources of water pollution in the community and how these sources as well as the use of insecticides in the rice fields could harm fish populations. Students learned how protecting water resources is important for families and future generations. This approach provided an opportunity for students to develop a sense of ownership and responsibility to the environment and local community. The researcher's proposition was that even if students leave their community to go to higher education in urban areas, they may be more likely to return if they are connected and attached to their community or they may support their community from afar with resources or advocacy.

According to the Office of Education Council (1999a; 2004), the student exodus out of rural areas to urban centers in part arose due to educators in the Thailand Ministry of Education who had been prepared in Western teaching techniques. Because of this they gave little thought to adapting local school curricula to local community cultures. Western teaching techniques with their focus on learning content and test taking can be characterized as primarily urban; students reflect the highly urbanized cultures of many Western nations. Western ideas have had a powerful influence on Thai education because many in modern Thai society believe that education can help Thais have a prosperous, materialistic life. This influence explains why so many in the Thai Ministry of Education have been trained in Western education approaches.

Western influence on Thai education not only influenced teaching techniques but also educational administrative techniques. Specifically, Thai educational practices and curricula for all urban and rural schools in the country were uniformly standardized and administered by the Ministry of Education in Bangkok in the 1990s (Office of Education Council, 1999b). This centralized control was subject to continuous change based on political changes in leadership. Unfortunately, it became apparent that this type of administration was not successful in rural areas because the National Curriculum was not relevant to the needs of the rural population. In fact, the centralized policy was so politically unpopular that in 1999, the National Education Act reversed the policy, decentralizing the education authority, and returning it back to the districts to develop relevant education programs, provided they met the requirements of the overall national standards and policies.

According to Ampra and Thaithae (2001), when the local districts were given the management authority to implement in the basic education curriculum of 2001, the schools were able to create curriculum suitable for their locales. Almost instantaneously, school management

became more responsive and efficient. However, in the rural areas, the schools still faced a lack of financial resources and professional staff. Because of the difficult economic situation in rural areas, instead of teaching the students to become good members of their communities, teachers continued to feel pressure to focus on teaching the students to pass national tests so that their students might continue on to study in more prestigious schools elsewhere. If successful, the local school would become well known academically, with increased numbers of students, which, in turn, would attract more money for the school and the teachers. At the time of this writing, however, while national tests focus on academic achievement, they do not assess the quality of the relationship between the school curriculum and the local community. In addition, the National Curriculum of 2001 has not included goals like the moral and ethical development of the student or their preparation as contributing members of local or national communities.

## **Methodology**

### **Purpose of the Study**

This qualitative case study explored the application of place-based education at the local, rural level to determine its potential to reduce or eliminate the achievement gap between rural and urban areas, and to be replicated in all rural schools in Thailand. Specifically the study collected data regarding the following:

1. The ways in which preparing teachers with teaching strategies can help Thai rural students make the connection between science knowledge and their own lives in rural communities and improve learning outcomes.
2. The ways that Thai teacher and student attitudes toward place-based education changed.
3. The steps involved in developing and assessing the implementation of a model of place-based science curriculum for elementary school teachers in rural Thai areas.
4. The nature and scope of student learning and achievement in place-based science education classrooms.
5. The field-testing of a researcher-developed place-based science professional development program for rural teachers and a place-based science curriculum for schools in rural areas in Lampang Province.

The study's outcome has theoretical and practical significance. It contributes to the development of theory about the optimum uses and applicability of place-based education techniques in teaching and learning about science. The study informs researchers about an approach to overcoming resource restrictions of rural schools. The study assesses improvement in teaching performance and job satisfaction when a creative curriculum is developed. Finally, the study provides a set of in-depth case studies from which stakeholders—including policy makers, scientists, and educators—may gain rich insights about connecting academic knowledge to real life at the community level.

### **Research Question**

Based upon the results from the pilot project in one school that demonstrated how PBE was an effective curriculum organizing principle, the following research question was developed: In the context of rural Thai elementary schools, how do teaching and student achievement change as a result of the teachers' participation in a place-based science professional development program?

### **Qualitative Research Design**

According to Creswell (2007), qualitative research and mixed methods are most appropriate to use as research methods when there is a need to explore a problem or issue. This researcher believes that it is the best tool available to explore and understand the rich and deep meaning people and groups attribute to human problems based on published research studies. This methodology has greatest relevance for exploring the type of questions posed in this research study (Creswell, 2007; 2009; Denzin & Lincoln, 2000; Fontana & Frey, 2000; Gelo, Braakmann & Benetka, 2008).

Specifically, this research study focuses on a number of small schools in Lampang Province in rural, northern Thailand, that have not been studied before except in the researcher's pilot study, and about which little information exists in scholarly literature. In addition, because so little documentation exists about this specific subject matter, exploratory investigation is the best way to approach this inquiry. Data come in part, from interviews gathering the voices of village and community leaders, school teachers, village and district-level education leaders, and students. In addition, professional histories of school curricula were gathered and reviewed. Field

notes were written based on participant observation of classroom teaching and student learning conducted by this researcher in Thailand. Data collected on student learning included observations of students during classroom instruction and artifacts produced by the students. Although mixed methods were not central to this qualitative study, standardized test scores were collected and evaluated in the context of overall student achievement. From these data sources, themes have been identified describing place-based science curricula that participants have found to be the most promising for student achievement, professional teacher development, and rural school curricula.

### **Data Collection Site**

Open-ended observation and open-ended interviewing of the selected participants in Lampang Province in rural, northern Thailand took place first hand by the researcher because observation of individuals in their own social settings offered valuable insights into their motivations (Creswell, 2005).

### **Sampling and Selection of Participants**

Sampling involves selecting individuals to study who have something in common that can be studied by a researcher (Creswell, 2005). In this study, the researcher used a “purposeful sampling technique” where the particular settings, persons, and events were intentionally chosen in order to get information that is not available from other sources (Maxwell, 1996). The researcher recruited 7 elementary school teachers from 5 different schools and villages in Lampang Province, 120 elementary school children from the same 5 schools and 10 mixed gender community members from the same five communities as volunteers using the following selection criteria:

1. Rural schools in Lampang Province in northern Thailand;
2. Elementary school teachers and students in grades 1 through grade 6;
3. Diversity of grade levels in elementary school from grade 1 to grade 6;
4. Diversity of ages of teachers, students and community members;
5. Diversity of gender in teachers, students and community members;
6. Diversity of occupations of community members; and
7. Diversity of education of teachers and community members.

Through open-ended and semi-structured interview techniques, these participants talked about their experiences using both traditional and place-based education techniques and their respective connections between science knowledge and real life. Other data sources in the study included a pilot study and researcher's field notes of observations made about the participants during the interviews.

The researcher selected small schools (< 500 students) in the same educational administrative district with their voluntary cooperation. The researcher selected a sample from the following groups of participants:

1. 7 volunteer teachers (1 male and 6 females) from different schools and villages in Lampang Province. Teachers who taught Grade 1-6 from the following 5 schools: WTT Elementary School, PW element Elementary School, BHP Elementary School, PCW Elementary School and, PNT Elementary School.
2. 120 students participated in Grade 1-6 from 5 schools.
3. 10 mixed gender community members (2 from each school, all over 30 years old, and residents in the villages where the schools were located) who volunteered and were purposely sampled from a larger group to participate in the study.

### **Documents, Field Notes, and Self-Memos**

The researcher relied on the analysis of documents as part of the observation set; these included class notes, student assignments, student evaluations, teacher lesson plans, curriculum plans, and curriculum evaluations. These data were collected to investigate possible connections between these documents and other elements of the observation set that were expressed in different ways.

Field notes enabled the researcher to record the ideas and reflections of the researcher that emerged while collecting data. According to Bogdan and Biklen (1998), field notes can be invaluable resources, because recording what the researcher experiences, sees, and thinks can help to focus the observation collection. For example, in this study, the researcher created a chart demonstrating similarities and differences between participants.

Similar to field notes, the researcher used self-memos to record descriptions, summaries, and feelings about the issues that emerged in this study. These memos function to connect personal reflections with research strategies and techniques (Maxwell, 1996). Recording observations in self-memos was useful in the sense that frequently when being presented with participant experiences, the researcher understood how they fit into the broader picture, especially in the beginning of the interviews. It was determined only afterwards while reviewing notes that patterns began to emerge.

### **Data Analysis**

The researcher trained the teachers to teach science by using the place-based science education approach. The teachers then taught the students and the researcher noted patterns about what was observed and responded to by the participants who experienced the actual process of place-based instruction. These findings were compared to existing notions about place-based education that were formulated elsewhere.

For this study, analytic categories and relationships were drawn between the data from interviews and observations to answer the central research question. The qualitative data collected from each data source were analyzed separately and then the results were merged to look for additional confirmatory or contradictory results. The categories related back to the research question: In the context of rural Thai elementary schools, how do teaching and student achievement change as a result of the teachers' participation in a place-based science professional development program? These may provide some insights into findings and the application of place-based education in the Thai context

## **Results**

The teachers learned how to connect local knowledge and academic knowledge so as to make classroom learning more meaningful, whether in science or other disciplines. The place-based education model helped teachers to develop a curriculum that used community resources for student learning. Teachers also learned how to use multiple-assessment techniques to measure student learning and academic achievement. A variety of assessments was used, not only standardized test scores. These assessments were more authentically related to the goals of helping students apply science skills from the National Curriculum in their completion of science projects. For example, by students studying weevil or frog behavior in-depth, teachers were able to observe student learning in science that connects to the community. The artifacts that students created (e.g. graphs, journals, poster displays) were further evidence of student's science learning. When the students studied ecosystems in the community, the students were assessed on their actions and how they thought or wrote about using insecticides in the rice fields. The students also drew diagrams to represent their understandings and learned about the effect of oil pollution in their communities. The students came up with ideas for science projects to sustain the environments surrounding the community. For example, the students experimented to find out the best plants for absorbing the oil. The students learned about being responsible in their own communities.

Administrators were introduced to the value and relationship of community resources to classroom learning and were encouraged to be creative in the use of these, especially when government-provided finance and resources which were lacking or inadequate. Place-based education in effect, encouraged both teachers and administrators to be more responsible for school success and more creative and determined in developing ways to achieve this.

At the beginning of the teacher professional development training, the attitude of the teachers was poor. They were not confident, and they viewed science as a difficult subject to teach that they were not interested in. After the training process, the teachers learned teaching strategies that supported the Buddhist way in which they supported and networked with each other. As the teachers participated in the place-based education training, the attitude of the teachers began to change. The interviews and symposium provided evidence that place-based education helped the teachers make connections between science learning and everyday life. Although most of the teachers had no or very little background in science, they began to understand why it was important to teach science. After the training, the researcher followed up to learn how teachers were doing in teaching science through the place-based approach.

Overall, the place-based science lessons were successful because of: (1) team support from peers; (2) student behavior change that came about as the students were more responsive to the activities that connected to their families and local communities; (3) parental support from the communities that became strong and clearly evident, and (4) strong feedback and/or support of the researcher, and school principals that emerged. Because of their lack of experience teaching science, the teachers initially lacked confidence and they had trouble teaching science in depth. In comparing the first and second observations, however, the teachers gained confidence and were successful in engaging the students in science activities that connected to the local communities. Part of this success was due to the coaching and support for teaching place-based science lessons that the researcher provided the participants. The teachers were first engaged in model lessons taught by the researcher; later, the researcher and peer observers provided feedback and suggestions as the teachers taught the lessons. The teachers learned to apply an active way of teaching and learning in class. They tried many place-based education approaches to their teaching. By supporting each other through the peer observations and discussions, as well as

through feedback and resources from the researcher, the teachers continued to work hard as they tried to improve themselves.

Students' behavior changed significantly over time as a result of place-based education. At first, the students were quiet and did not talk in class. Later, the students became actively involved in talking about the results of their experiments and investigations in the local communities. They learned to talk with and ask questions of guest speakers and adults from the local communities, some of whom were strangers to them. From the researcher's observations and interviews with teachers and parents, it became obvious that students became more curious, outgoing, and confident over time. The students also developed reasoning skills. They could explain what was going on in class and they were able to analyze problems, problem indicators, causes of problems, and potential solutions. According to the Buddhist way, students learned not to judge a problem from what you see. Instead they analyzed what different indicators there were of the problem, what caused the problem and then tried to apply solutions to eliminate or diminish the problem. This was exemplified by students investigating the life cycle of the mosquito to find the best time to destroy the insect to keep it from reproducing or when students tested the water quality to identify the cause of the yellow color in the water. The students also applied their knowledge to related problems in the community. As result of place-based science teaching, most of the students performed well. Some students continued to struggle however, because of reading and writing problems although they were able to express their understanding of difficult information by orally answering questions. The students also did well as they gained more confidence in their teachers. Third grade students' improving science test scores over a six-month period (67.84 average score in grade 3; 83.94 average score in grade 4,  $p$  value < 0.05,  $n =$

50) were further evidence of students' achievement, mastery of the subject matter and empowerment.

The parents involved in the project did not originally believe that they were part of the schools, and certainly did not think they had a role in the science curriculum. However, they were very happy to collaborate with the teachers on the lesson planning and share their knowledge and experiences with the students. The parents were amazed with how the students were actively engaged in reasoning, problem solving, and discussing science. According to Buddhist tradition, the students were very respectful and appreciative of the elders that were involved in the project. Because it was important to connect science taught in the Thai National Curriculum with local funds of knowledge, the support of the community was critical to the success of the place-based education lessons.

The school principals wanted to see what would happen with the place-based science education approach. They could see that students were enthusiastic, engaged, and their performance was improving. The principals also observed what happened to the teachers as a result of the place-based science professional development program – seeing that the teachers had developed a more positive attitude about science teaching. The teachers changed from thinking that their role was being a scientist (with which they did not feel comfortable) to understanding that their role was to be a guide to science learning by bringing in natural and human resources from the local community. Place-based science education helped to change their attitude toward making personal changes. Most importantly, the teachers developed a new found respect for science and their important and even critical role in enabling students to discover the wonders of science for themselves.

As evidenced by the success of the symposium, teacher professionalism, understandings of science, and outreach to the community were enhanced. Students also demonstrated increased confidence and competence in science.

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Class Design to Motivate, Encourage the Broadening and Maintenance of the  
Possibilities of First Year Students: Relationship Formation Between  
Undergraduate TAs<sup>1</sup> and First Year Students as the 'Axis' of the Framework

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## Abstract

### Background

As we welcome the era where more and more individuals are attending universities (college universality), along with the need for redesigning to classes and improve the quality of education, the need for the cultivation of basic societal skills such as independence and pro-active mindsets, problem-solving and leadership has also come into question.

On the topic of college universality, Kawashima (2008) points out that the lack of students' 'study abilities' as well as a 'desire to learn' results in their difficulty transitioning and adapting from high school to university, stating that in first-year students' education, 'the support for the students' transition from high school to university, as well as 'the extent to which students themselves understand the meaning of pro-active learning' are correlated, and that the objective of first-year education is to have freshmen learn basic skills, as well as the formation and maintenance of 'a desire to learn' and 'good study habits'. Hamana (2009) also argues, more specifically, that through group work with friends, mentors and upperclassmen, the usage of non-passive learning methods and self-reflection are shown as important factors in first-year education.

In accordance with the 2008 reports of the Ministry of Education, Culture Sports, Science and Technology Central Council for Education, 3) Improvements in

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<sup>1</sup>学部生 TA: primarily undergraduate students in or above their 2<sup>nd</sup> year chosen to help facilitate student discussions and provide additional assistance where necessary. Each peer supporter is in charge of a group of 5-6 students.

Educational Methods, (3) Specific Plans for Improvement (pp. 23-24), ‘the proposal for TAs (Teaching Assistants), which garnered high expectations from universities, has been actively implemented in APU for mutual learning and for supervising small numbers of students. The role of TAs has further expanded, including active participation in class planning(e.g. discussion, debate etc.)and additional support outside of class. Outstanding students are also considered as candidates for other peer support roles such as SAs (Student Assistants).’

At APU, faculty in charge of first-year education subjects attempt to create classes from the students’ perspective, actively assign undergraduate TAs to classes, and give the first-year students opportunities to learn from and lead each other.

### **Research objectives**

The main focus of the paper is to analyze how the first year students’ relationships with their upperclassmen in their role of peer supporters affected the first years’ development. This research aims to clearly show how passive students who have limited ability to translate thought into action experience growth after taking part in the Introduction to APU class. It also hopes to clarify how the development of each student brought about change in the cooperative learning process of his/her respective group.

### **Summary of the “Introduction to APU” Class**

Starting in the spring semester of 2009, “Introduction to APU” has been launched as a 2-credit freshman seminar class. This subject, which outlines the understanding of APU’s ideals and history, adaptability to all aspects of the university lifestyle and a growing sense of community belonging, the improvement of study attitudes and goal orientation, and the conversion to responsible and active learning as its objectives, is designed towards the acquisition of knowledge, skills, mindset and actions that contribute to a successful university life.This class is based on the University of South Carolina’s “University 101” freshman class, but includes APU’s ideals and characteristics for the creation of a unique class course.

Introduction to APU is composed of one Japanese-basis class and one English-basis class, with a small class size of 30 students per class, and its four distinct characteristics are as follows.

1) The usage of case study materials: The study materials are based on reports written by approximately 30 upperclassmen regarding their experiences during their university life, with 50 case studies selected and compiled for usage in accordance with the class

topics.

2) The allocation of upperclassmen as peer leaders: Each upperclassman peer leader is in charge of 1 group (6 members) of first-year students. Peer leaders help facilitate group discussions and activities, and are also tasked with writing constructive comments for each week's assignments. Peer leaders also do consultations with the freshmen as necessary.

3) Cooperative learning: Case study materials are used as the basis of thorough group discussions. Afterwards, groups present the results of their discussions with the entire class. The class also provides opportunities for domestic and international students to engage in multicultural cooperative learning, encouraging intercultural understanding and measuring the growth of the students' ability to work with people of diverse backgrounds.

4) Reflection: After each class, "Reflection" reports are assigned to the first-year students (1000 characters in Japanese, 800 words in English), promoting self-analysis and reflection. Outstanding reports are shared with the entire class.

## **Methodology**

The sample of this study is taken from the Introduction to APU (First-Year Education subject) students and the upperclassmen who provided peer support. The data is taken from self-evaluation questionnaires distributed during the first and last classes of the semester, with the average of the students' evaluation scores taken and the difference between the first and second self-evaluation used as the basis for quantitative analysis on possible changes in the students' way of thinking. Additionally, reflective essays written by both the first year students and their upperclassmen will be used as material for qualitative analysis. The qualitative analysis, based on the grounded theory, will attempt to outline the growth of the first year students from their own perspectives as well as that observed by the upperclassmen peer supporters. This paper will also analyze the upperclassmen's final reflective essays, in particular their experiences as first-year students' peer supporters.

## **Result and Discussion**

From the questionnaire results, it was found that there were significant differences in answers, particularly for the items 'I was motivated', 'I was proud to be an APU student', 'Relationships with people are important' and 'the importance of reflection'. It can be said there were changes in the students' way of thinking before and after taking the Introduction to APU class. There were also many written reports by the

students discussing the importance of taking action, becoming a more active student and other such ideas, supporting the results of the questionnaire.

The written material from the undergraduate TAs outline the first-year students' changes in detail, with the meetings and consultations with individual students outside of class and the subsequent changes in the students' attitudes towards class activities suggesting a strong correlation between the two.

It should also be noted from the instructor's observations that after meeting individually with the TAs, the students' atmosphere as a group improved, and their attitudes shifted to one of mutual dependency. The TAs, who were able to empathize with the students' feelings and learn the freshmen's future goals, can thus be said to have built good rapport with them. By respecting the uniqueness of each group member even while continuing to lend a helping hand where necessary, the upperclassman peer supporters have arguably contributed to the students' proactive stance of broadening their own possibilities.

For the first-year students, who have taken the class directly after enrolling as a student in the university, the changes in the students' individual ways of thinking, as well as the change in the results of group-based learning indicate that they were affected, to an extent, by their interactions with their upperclassman peer supporters. While observing how the first-year students mature as they interact with the peer supporters, instructors also receive an invaluable opportunity as educators to grow alongside them.

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# 12<sup>th</sup> Annual Hawaii International Conference on Education

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## Experience “Math with Robots” Using Inquiry and Design Processes: A STEM Learning Module Workshop Topic Area: Cross-Disciplinary Areas of Education

**Presentation Description:** Participants will learn mathematics definitions/concepts needed in Algebra 1 and emphasized in the new common core state standards during hands-on inquiry and design activities. The final design challenge requires they modify the robot and write a program to allow the robots to complete a challenge activity utilizing the knowledge and skills acquired during the workshop.

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# **Experience “Math with Robots” Using Inquiry and Design Processes: A STEM Learning Module**

## **Abstract**

This paper will present an example of effective educational training and support services provided by the National Center for the Advancement of STEM Education (nCASE) that will address our nation’s critical need to produce more scientists and engineers (S&Es) from our pre-K-12 student population. These services utilize a variety of effective instructional methods with select teachers across the United States to positively prepare targeted K-12 students (including those from underrepresented groups) with the skills required to be successful in STEM subjects with the ultimate goal of encouraging them to join the STEM workforce. In a world where advanced knowledge is widespread and low-cost labor is readily available, U.S. advantages in the marketplace and in science and technology have begun to erode. A comprehensive and coordinated federal effort is urgently needed to bolster U.S. competitiveness and pre-eminence in these areas (National Academy of Sciences [NAS], 2007).

## **Introduction**

The public may not realize that the DOD is the largest employer of those working in STEM. Both the DOD and private industry have found that our nation’s education system is not graduating enough students qualified to fulfill the current/future needs of our STEM workforce.

In an attempt to reverse the STEM deficit, President Obama increased federal support for STEM education under the authority of the America COMPETES Reauthorization Act of 2010 (<http://www.whitehouse.gov/administration/eop/ostp/nstc/committees/>). He also authorized several key governmental agencies and committees to work together on this initiative.

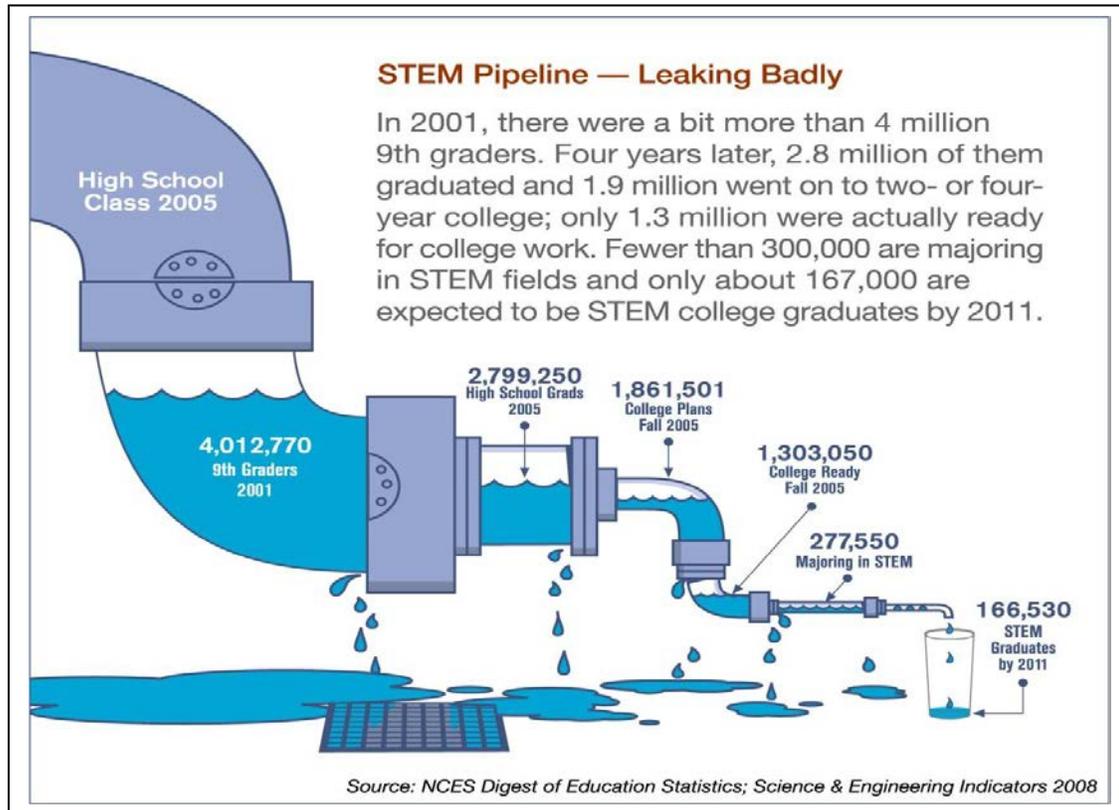
The National Science and Technology Council (NSTC), established by Executive Order on November 23, 1993, is chaired by the President and remains the principle means within the executive branch to coordinate science and technology policy across the federal research and development enterprise (NSTC, 2011). As part of its renewed commitment to STEM education, the NSTC established its Committee on STEM Education (Co-STEM) to focus on Federal STEM education activities and programs. In turn, Co-STEM established the Fast-Track Action Committee on Federal Investments in STEM (FI-STEM) to develop a STEM inventory. It also chartered the Federal Coordination in STEM Education Task Force (FC-STEM) to prepare the Federal STEM Education 5-Year Strategic Plan (2010-15) under its oversight (NSTC, 2011).

A major cause of the S&E shortfall is the anemic academic performance of U.S. students as measured on national and international tests of STEM learning. The achievement gap in turn contributes to students’ reluctance to pursue STEM careers (NSB, 2006). Another contributing factor is inadequate teacher preparation. Better prepared teachers and greatly improved teacher in-service programs are two essential ingredients for obtaining stronger academic outcomes for this nation’s K-12 students (Education Week, 2013).

## The Problem

The leaky STEM pipeline problem identified in **Diagram 1** below was presented by Robert Seltzer, DOD National Defense Education Program Point of Contact in Orlando, Florida, at a 2011 Navy briefing. The data was taken from the National Center for Education Statistics, Science and Engineering Indicators 2008.

**Diagram 1**



A review of **Diagram 1** gives evidence that in 2001 there were a little more than four million ninth grade students in U.S. schools. By 2005, approximately 2.8 million of these graduated from high school, but only 1.3 million were college ready. Only 277,000 of those ready for college majored in STEM. It was projected that only a little more than 50 percent of those initially enrolled would graduate in a STEM field. This is a serious problem for our nation—one all of us must address collectively. nCASE utilizes an effective intervention as a solution to this serious dilemma. During its professional development training programs, it delivers a major portion of the STEM content in a student-centered classroom using inquiry and design as the instructional process and adds real-world relevancy by including DOD S&Es as coaches/mentors. The workshop that follows has been developed using this effective delivery model.

## Effective STEM Professional Development

nCASE provides teachers and S&Es with effective strategies that strengthen the skills and content knowledge of their K-12 students (including those from underrepresented groups) to allow them to succeed in STEM subjects and eventually join the nation's STEM workforce.

A unique component of the training is that classroom teachers will be trained together with U.S. DOD laboratory S&Es in a method of instruction modeling a student-centered approach emphasizing inquiry (science, technology, mathematics) and design (engineering) elements (Action Research, 2007, 2008, 2009). This collaborative approach includes teachers, students, school administrators, S&Es, and STEM education partners, which enriches the learning process. The **five areas of foci for nCASE training** are: content knowledge, inquiry- and design-based teaching skill sets, research processes, STEM communication, and classroom integration of digital technology.

During this condensed Math with Robots I (MWRI) training program, participants will learn that STEM is comprehensive and integrated for students in the activity-based, inquiry and design (I&D), student-centered classroom. As a culminating activity, participants will be challenged to reflect and share ideas that will be used to modify the design and program challenge activity applying the knowledge and skills acquired during the module activities and instruction.

The first unit was developed to provide Algebra I/STEM teachers innovative materials to be used with all students (even those identified as "at risk") to successfully complete Algebra I without some type of intervention. Since then, additional units have been created to address the standards in the Achieve Model Pathways Integrated Math I course ([www.achieve.org/files/CCSSI\\_Mathematics\\_Appendix\\_A\\_101110.pdf](http://www.achieve.org/files/CCSSI_Mathematics_Appendix_A_101110.pdf)).

Motivation for the development of MWR materials came from the K-12 classroom teachers who were searching for supplemental materials to use with Algebra 1 students. Materials needed to be different than those already being used. nCASE decided to assist in the development of instructional materials using Lego Robotics kits that would include scientific inquiry as well as periodic design challenges all viewed through the lens of mathematics. Lego kits were chosen due to their low cost and non-metal parts. Plastic parts reduce the possibility of cuts with the younger audience. In addition, many science teachers have sets of the Lego robotics platforms which can promote the sharing of resources when math and science teachers are trained together in teams.

These materials have been used in several workshops throughout the U.S. (Alabama, Hawaii, Illinois, Maryland, Massachusetts, New Jersey, and West Virginia) during professional development for teachers as well as in pre-service teacher education classrooms.

## **Workshop Focus: Math with Robots I (MWRI)**

(For more information, visit [www.nacase.org](http://www.nacase.org).)

### **Introduction to the Inquiry and Design Process Models**

Through several activities, participants learn about the attributes and advantages of the Math with Robots I STEM learning module. Each activity prepares teachers/S&Es for the culminating design challenge project, which brings together everything they learned during the module. In today's workshop, we will share one activity with you, "Introduction to Wheels." Participants also learn about the attributes and advantages of other STEM Learning Modules (SLMs) related to specific core content. In addition to the adapted Ball Model (Ball, 2003) used to create the MWR materials, we will share the inquiry process model (Carin, Bass, & Contant, 2005) and the design process model (Northwestern University, 1999). Because the design process is interactive, participants get to apply what they learn during the inquiry activities in real and satisfying ways.

**Overview:** Participants will learn mathematics definitions/concepts needed in Algebra 1 and emphasized in the new common core state standards during hands-on inquiry and design activities. The final design challenge requires they modify the robot and write a program to allow the robots to complete a challenge activity utilizing the knowledge and skills acquired during the workshop.

### **Workshop Purpose**

This workshop is intended to motivate participants to learn the mathematics associated with the study of Lego Robots. Learning Objectives include: comparing and contrasting attributes of different wheels and sharing ideas that will be used to modify the design in a challenge activity.

### **Procedure, Data and Observations for the MWRI Learning Module**

**Participants will:** deepen their understanding of I&D-based methodologies utilized throughout the modules; review the requirements, responsibilities and expectations for scientists, engineers, and teachers; use the constructivist approach to explore the module; interact and network with experienced nCASE/NDEP module educators, including DOD S&Es; explore the integration of appropriate technology within the nCASE/NDEP modules; and participate in discussions throughout the training to differentiate the module and explore support resources.

### **Conclusion**

This paper describes one of the many nCASE STEM learning modules developed to lead students toward a rigorous, in-depth understanding of mathematics as related to the application of the study of wheels associated with robots. The ultimate goal is to increase the number of pre-K-12 students seeking STEM careers and to improve student achievement in STEM courses. We hope to provide a 21<sup>st</sup>-century vision within a student-centered setting as well as provide administrative oversight and support services to select teachers using the expertise and experience of practicing DOD STEM professionals.

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## **HICE 2014 Conference Proceedings**

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- 6. Abstract**

The purpose of this study was to explore the implications of continual, shared, online reflections among students in a web-enhanced course. Participants of the study were twenty-two graduate students who registered in the Second Language Acquisition (SLA) course at the Institute of Foreign Languages (IFL), Royal University of Phnom Penh (RUPP). The SLA course was a web-enhanced course which employed EDU2.0 as a virtual learning space in addition to the regular 3-hour weekly face-to-face class. After each weekly class, students were required by their lecturer to post a reflection of the class online using the class’s discussion forum. The forum served as an open space for students to share their reflections with their peers and comment on each other’s reflections. Data of this study were collected from an interview with the lecturer, four focus group interviews with students, and over 150 written reflections from the class discussion forum, which were later coded and analyzed to identify common patterns and themes. The results of the study showed that shared online reflections were perceived to be beneficial for peer-to-peer learning and support. However, lecturer also needed to consider the issue of authentic participation when employing online reflection as a component of the course assessment.

## **Mixed-Age Settings: The Importance of the Role of Relationships Between Children in Early Childhood Programs**

In 2012, approximately 10.9 million children under the age of 5 years old attended some form of child care (Child Care Aware of America 2013). With increasing numbers of young children spending the majority of their days cared for outside their homes, children are progressively spending larger amounts of time in groups of children of the same age. Outside of childcare settings, it is uncommon for young children to spend considerable lengths of time in groups of children of the same age. In fact for most of human history, mixed-age learning was common: it is only in modern day that schools began to group children by age into grades. This is in stark contrast to the family-type setting where you typically find children that are heterogeneous in age, as well as the real world such as in the work force, gym, or park, where people interact with others of all ages.

This same age grouping practice in early childhood education is likely based on the assumption that chronological age is the single most reliable developmental index. However, this article argues that developmental factors other than chronological age (i.e., social, emotional, and cognitive level of maturity) are more valuable aspects of a child's development. Research has found that social and communicative interactions play a key role in learning (Wells and Claxton, 2002; Daniels 2001). Subsequently, this article proposes to examine the structural components that help cultivate the development of healthy, secure relationships between and amongst children in early childcare centers and family home programs. This article argues that through child-to-child relationships, mixed-age classrooms support the development of the young child in a unique way. For the purposes of this article, mixed-age classrooms are defined as classrooms in which children of different ages are grouped together. This article will also discuss the research

findings that delineate the benefits of mixed-age groupings and explain how being in a mixed-age classroom may have positive effects on children's social, emotional, and cognitive development.

### **Mixed-Age Learning: A Review of Research**

Researcher Peter Gray reviewed articles, published between 2000-2010, in the two foremost early childhood journals *Child Development* and *Developmental Psychology* and found the preponderance of studies focused on child-child interactions amongst single-age groups (Gray 2011). He determined that during the first decade of the 21<sup>st</sup> century only 213 articles centered on mixed-age groups. The limited research available has stated that a child's social development in a mixed-age environment is significantly different from those in single-age groupings. Research suggests mixed-age groupings support increased self-concept and improved attitudes towards school as compared to single-age groups (Veenman 1995). These benefits are further manifested the longer children are involved in mixed-age groupings (McClellan and Kinsey 1999). Additionally, mixed-age groups benefit from the differences in age and ability: social isolation is less common than in same-age classrooms, and increased social skillfulness is apparent as children gain practice with younger children (McClellan and Kinsey 1999). The researchers also found that these benefits carry on beyond the mixed age classroom. This may be particularly beneficial to at-risk populations, as their early experiences may serve as a protective factor for any future challenges. Overall, mixed-age interactions promote greater long-term pro-social behaviors, including helping, cooperation, turn-taking, and caring for others.

The scant research that exists on the role of relationships in early childhood education denotes that the child-to-child relationship plays a critical role in fostering a young child's development. Based on these findings, it may be extrapolated that mixed-age programs will

further support development as children learn from both their age peers and older children.

Accordingly, Veenman (1995) finds “students have a chance to form relationships with a wider variety of children than is possible in the traditional same-age classroom. This leads to a greater sense of belonging, support, security, and confidence” (p. 322). Furthermore, given that spontaneously formed peer groups are typically heterogeneous in composition, the separation of children into same-age groups in early childhood education settings is something that requires further examination.

The principles behind mixed-age grouping are supported by the work of Lev Vygotsky, a well-renowned developmental theorist. Vygotsky believed that children learn by observing others, then imitating their actions while adapting to fit their own needs (Vygotsky and Rieber 1988). He also emphasized the importance of social interaction and community in learning and stated “learning presupposes a specific social nature and a process by which children grow into the intellectual life around them” (Vygotsky, 1978, p.88). Age integration allows for children to have the opportunity to observe, emulate and initiate a wide range of competencies. In a study by Howes and Farver (1987) pretend play between two year olds, five year olds and two year olds with five year olds was examined. They observed that the five year olds played at the same level with their same age peers as they did with the two year olds. The five years also brought up the two year olds level of play through instruction and guidance. In a mixed-age classroom, younger children are exposed to older children, who model more sophisticated approaches to problem solving. This creates a "win-win" environment, where younger children accomplish tasks they could not do without the assistance of older children, while the older children increase their feelings of independence and competence.

Further mixed-age classrooms develop cooperation skills where children nurture each other as individuals, rather than see each other competitors (McClellan and Kinsey 1999). Moreover, research has found that children in mixed-age settings are more likely to offer instruction to younger peers than to age-mates (Ludeke and Hartup 1983). This reduced competitive pressure has shown to help foster children's development along several lines. Brownell (1990) concluded that 18 month olds in mixed age interactions are more socially active, socially involved, and affectively enthusiastic. Toddlers in mixed-age groups have higher Battelle Developmental Inventory scores in language, general cognitive and motor development (Bailey, Burchinal, and William 1993). Research has also found that children in mixed-age classrooms exhibit increased maturity and cognitively complex play (McClellan and Kinsey 1999).

### **Discussion**

Research supporting mixed-age groupings finds a number of benefits to both children and teachers; additionally, mixed-age environments demonstrate a number of advantages in practice. A mixture of ages within a class can be particularly beneficial for children who may have fewer peers that match their development in a more homogenous setting. These children may find it less stressful to interact with younger peers than with same-age peers. Such interactions can enhance younger children's motivation and self-confidence. In addition, these older children benefit from an enhanced self-concept as they help teach younger children in the classroom (Veenman 1995). By allowing children to learn at differing rates and levels, mixed-age classrooms greatly reduce the performance stress on young children as well as diminish stereotyping (Aina 2001). The availability of younger and therefore less threatening peers in

mixed-age groups offers the possibility of remedial effects for children whose social development is at risk.

Mixed-age classrooms also create an environment of community (Aina 2001) as children and teachers often spend longer periods of time together than in single age classrooms. Close teacher-child, teacher-parent, and child-child relationships allow for the development of mutual trust and understanding (Kinsey 2001). The resulting long term relationships between the teachers, children, and parents are regarded as the major determinants in the resulting deeper social and cognitive development in the children (Nye, Cain, Zaharias, Tollet and Fulton 1995). These continued relationships and the consistency “is viewed as one of the most significant strengths of the mixed-age approach because it encourages greater depth in children’s social, academic, and intellectual development” (McClellan & Kinsey, 1999, p. 2).

### **Practical Challenges**

Research supports mixed age group settings in terms of the significant benefits for not only the children but their caregivers as well. The creation of these settings does not only help optimize children’s development but also greatly helps teachers in the caregiving process, particularly alleviating the stress infant caregivers often report feeling in infant-only classrooms (NICHD Early Child Care Research Network 1996). As children of different ages likely have different developmental needs, not all children will have the same caregiving demands at the same time, allowing teachers to provide individualized care. Structural aspects of a caregiving program can also play a role: the environment can also help support and facilitate mixed-age groupings. For example, having a shared outdoor space may promote interactions between children across a wider age spectrum. In addition, Miller (1996) found mixed age classrooms

have some commonalities, including supportive families and administration, committed educators, and greater teamwork among staff members (as cited by Walser, 1998).

Extensive planning further supports the success of a mixed age environment. Teachers must consider the flow of the day and keep a balance of activities to provide for differing developmental needs. Additionally, routines and the classroom itself must be organized to help children recognize what is expected of them and take on responsibility in the classroom. For example, children can help during clean up time as well as in preparation for upcoming activities. Structural supports in the program must allow teachers to observe and reflect on the children's capabilities to effectively plan for and provide for their learning needs. Lastly, teachers must have an in-depth understanding of the developmental levels of children in their care, with a strong understanding of child development.

Adapting care to different aged children in one group can be a challenge. Researchers note "teaching a diverse group of students demands individualized instruction" (Veenman, 1995, 322). Caregivers need to use specific strategies in mixed age settings in order to meet the needs of this unique cohort including how to approach implementing curriculum in mixed-age groups. Mixed age classrooms "focus on individuals rather than on grade-level expectations. [Teachers] also have more time to address individual needs because children spend more than one year in their class" (Walser, 1998, 2). In true mixed-age classrooms, children are taught together across the curriculum and are not separated into smaller groups by age to work on activities or projects, but are grouped using other attributes such as temperament and interest on the topic at hand. Research supports the idea of cooperative learning as a way to "manage academic heterogeneity in classrooms with a wide range of basic achievement skills" (Veenman, 1995, 374). Children work together in small groups to complete a task, each taking on their own responsibilities within

the group. This type of learning has been thought to increase cognitive gains, encourage pro-social interactions, and prompt higher-order thinking (Veenman 1995). Teachers need to provide opportunities that are challenging enough for the older children while scaffolding the older children to teach the younger children. This can come in the form of developmentally-appropriate materials (e.g., writing implements, paintbrushes) provided for children of different levels, or other structural modifications to cater to each child's abilities. Brown and Reeve (1985) maintain that instruction aimed at a wide range of abilities allows the novice children to learn at their own rate and to manage various cognitive challenges in the presence of "experts". That is to say that there is a limit to what a child can do on their own or with a peer of their same age and developmental ability, but when a child is with an older peer with a different level of skill sets, the younger child is brought to a higher level. Vygotsky described this collaborative learning that takes place between a younger child and an older child as the zone of proximal development (Vygotsky 1978).

Vygotsky also recognized that mixed age learning was not only an advantage for the younger children, but also for the older peers. The older peers, while acting as the teacher, share in the learning experience by "reflecting" their knowledge off the younger children. As the older peers present the information to the younger children, they have to work towards comprehension for the younger child by explaining their abstract knowledge in a concrete way, and during the process they may question their own previous understanding. Vygotsky described this process as reflective learning (Vygotsky and Rieber 1988). Though Vygotsky's theories are usually applied to the interactions between adults and children, there is another advantage when utilized between children. Children share similar activity levels and interests; therefore, interacting within the younger child's zone of proximal development comes more instinctively to them (Gray 2008).

These experiences with the younger child are believed to provide the older children opportunities to practice self-regulation and acquire pro-social and leadership skills (Messer, Joiner, Loveridge, Light and Littleton 1993; Winsler and Diaz 1995). Beatrice Whiting (1983) examined cross-cultural studies and determined that children from all cultures demonstrate more nurturing behaviors toward younger children than same-age peers.

### **Conclusion**

Mixed age groupings are beneficial to all parties involved if they are executed with appropriate planning and training. Children benefit from the increased heterogeneity of skills in the classroom, which prompts them to engage in prosocial helping behaviors with younger or less-skilled classmates rather than promoting competition. Additionally, teachers benefit from the diverse abilities as children help each other rather than seeking adult support at each turn. It is also obligatory for teachers to view learning on an individual level rather than maintaining a group-wide scope of teaching, which allows them to have a realistic view of each child's capabilities. While converting all single-age classrooms to mixed age experiences may not be feasible, portions of a child's day may include mixed age interactions to promote their learning in a new way. As children gain experience in mixed age groupings, they are gaining an understanding of how to negotiate social interactions with people of differing abilities—a key aspect of real life, as both families and society as a whole include multi-age interactions (Walser 1998).

The value of the relationships formed in mixed age settings increases as the children spend more time (i.e., multiple years rather than a single year) with the same peer group as well as the same teachers. This allows these relationships to deepen with time and familiarity, allowing the children to recognize the capabilities of others and provide support where required.

Additionally, as teachers come to know the children better, they can better equip them with the skills needed for successful social interaction and other learning across developmental domains. The benefits to this continuity all stem from the valuable relationships formed in the mixed age caregiving environment.

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1. **Title of the submission**: Strategies for Calming Fearful Patients (#1124)

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6. **Abstract**:

It was the purpose of this study to investigate the strategies used by therapeutic aquatic professionals when working with patients who are fearful in water. Twenty-seven (27) professionals responded to an on-line survey that examined clinician demographics, barriers patients encountered during the therapeutic process, and techniques and methods successfully used to help patients reach their aquatic goals. Demographic data was reported descriptively. Open coding was used to break down, examine, compare, conceptualize and categorize data on barriers encountered and techniques and methods used by practitioners. Results indicated that these professionals were highly educated with many years of experience working with patients in the water. With regard to barriers encountered by their patients, over half (51%) of practitioners cited psychological barriers such as past traumatic water experiences and lack of control in the water as obstacles to achieving the prescribed aquatic goals. Approximately 23% stated that physical barriers like getting water in their eyes, nose, and ears created a high level of discomfort for their patients. About 12% referred to cognitive barriers that included negative self-talk and lack of knowledge about the principles and properties of the water. Categories that collectively described successful techniques and methods used by practitioners were: (1) guided, self-paced progressions, (2) providing explanations, information, and demonstrations, (3) creating distractions, (4) using relaxation exercises, and (5) building trust. Finally, when asked if practitioners would like more training in the area of working with fearful patients, 13 responded yes, 9 responded no, and 4 said maybe (1 respondent skipped this question).



# White Teachers Perceptions of a Multicultural Curriculum and Self-Efficacy in Addressing Diverse Student Population: Gender Differences

## Abstract

The purpose of this study was to evaluate teachers' gender differences in two variables: multicultural curriculum and teachers' self-efficacy. The sample used was 136 White teachers in a suburban school district in Long Island New York, with a highly diverse student population. Thirty females were selected from a random sample of 106 females to contrast with thirty males. An Independent sample t-test was conducted to evaluate gender differences. An item analysis of all the items was further conducted. The gender difference means for teachers' efficacy showed no significance. However, for multicultural curriculum, female teachers tend to agree more than their male counterparts that multicultural curriculum occurs in schools.

Keywords: gender, multicultural curriculum, multicultural education, self-efficacy

## Purpose

As the population of the United States becomes increasingly diverse, including Long Island, New York, one of the most segregated areas in the United States (Erase Racism, 2005), a multicultural curriculum can bolster teachers' instructional practices by presenting multiple perspectives to explain phenomenon. Although the teaching force remains predominantly monocultural, White, middle class, female in both rural and suburban areas (Banks, 2001; Ladson-Billings, 1995, Sleeter & Grant, 2009), emphasizing a multicultural curriculum increases students' engagement (Fereshieh, 1995; Smith, 1999) while enhancing their self-efficacy. Benefits to self-efficacy are the influence on one's effort, perseverance, and resilience regardless of thought patterns that are self-hindering or self-aiding (Bong & Skaalvik, 2003; Bandura,

1977). The absence of a multicultural curriculum perpetuates the marginalization of traditionally disenfranchised groups. This paper examined teachers' gender differences in two variables: multicultural curriculum and teachers' self-efficacy.

### Theoretical Framework

Banks (2001) noted a major goal of multicultural education is to help students develop the knowledge, attitudes, and skills needed to participate effectively in their cultural communities and within the civic culture of the nation-state. Teachers' level of multicultural awareness improves their instructional practices when they include the experiences of students from diverse racial, ethnic, and linguistic backgrounds; this inclusion assist students in engaging in the learning process more (Shade & New, 1993).

Morote and Tatum (2010), while testing for multicultural awareness, evaluated the school's curriculum and instruction, which they explained pertains to materials and other educational resources used in the classroom to instruct students. It also includes the assessment procedures used by teachers and other educators to determine students' performance. While some teachers may be ideologically resistant to multiculturalism (Banks, 2006), Irvine (2003) noted that teachers have a responsibility to be culturally responsive, which includes incorporating elements of students' culture into their teaching. Culturally competent teachers ensure that their pedagogy is multicultural in that they use differentiated instructional techniques and provide instructional materials that include multiple perspectives (Irvine, 2003). Leaders' responsibility entails, but is not limited to, providing instructional supervision that endorses teacher's multicultural pedagogy.

Gorsky, Davis, and Reiter (2012) examined self-efficacy and multicultural teacher education in the United States; they found no significant difference across gender or other

demographic variables. Similarly, there was no correlation between participation in professional conferences and other professional development opportunities, or participation in professional associations and level of self-efficacy. However, Dee (2006) surveyed nearly 25,000 eighth graders on the influence of teachers' gender on students' performance. He used test scores and self-reported perceptions by teachers and students and found learning from a teacher of the opposite gender has a detrimental effect on students' academic progress and their engagement in school; having a female teacher instead of a male teacher raised the achievement of girls and lowered that of boys in science, social studies and English.

Although Bong and Skaalvik (2003) found teachers' self-efficacy contributes to their professional growth and development, Nadelson et al. (2012) noted there is no significant difference between teachers who received multicultural training and their attitude toward multicultural efficacy. Conversely, Siegel-Hawley and Frankenberg (2012) found teachers from various racial compositions found differences among the groups as it pertains to multicultural education in their school environment; inferring multicultural education can positively inform teachers' practices and self-efficacy while promoting students' academic needs.

### Method

The Multicultural Awareness to School Environment (MASE) survey was developed by Morote and Tatum (2010) to provide a valid assessment of respondent's level of multicultural education awareness. It was a 30 – item questionnaire. From the survey, 14 items were selected for the purpose of this study to develop two variables: multicultural curriculum and teacher efficacy. One hundred thirty-six White teachers participated in this study. Thirty females were selected from a random sample of 106 females to contrast them with thirty males in order to avoid type II error. An independent sample t- test was conducted to evaluate whether the mean

was significantly different from the two variables multicultural curriculum and teacher efficacy. An item analysis of all the variables was further conducted.

The teacher efficacy variable encompassed 5 items: Q2, Q5, Q9, Q10 and Q11. The reliability of these variables was 0.73 (Crombach’s Alpha) = 73.2%. Please note question 2 was reversed. The variable of multicultural curriculum encompassed 9 items from Q12 to 19 and Q21 of the original survey. The reliability of this variable was 0.85 (Crombach alpha) = 85.8%.

### Results

An independent t- test was conducted to evaluate whether the mean was significantly different between males and females and the two variables multicultural curriculum and teacher efficacy. In the case of teacher efficacy, the test was not significant  $t(47) = 0.87, p = 0.38$ , male teachers ( $M = 18.96, SD = 4$ ) and female teachers ( $M = 18, SD = 4$ ). The test on multicultural curriculum was approaching significance  $t(43) = 1.81, p = 0.07$ , male teachers ( $M = 25.86, SD = 7$ ) and female teachers ( $M = 29.73, SD = 7$ ). Females tend to have higher disposition on multicultural curriculum (See Table 1).

*Table 1*

*Gender Differences on Multicultural Curriculum and Instruction ( $N_F=30, N_M=30$ )*

	<i>Gender</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>M/I</i>	<i>SEM</i>	<i>t</i>	<i>df</i>	<i>p</i>
<i>Teacher Efficacy</i>	<i>Female</i>	28	<b>19</b>	<b>3.8</b>	<b>4</b>	.69	.874	47	.387
	<i>Male</i>	21	<b>18</b>	<b>3.6</b>	<b>4</b>	.88			
<i>MC</i>	<i>Female</i>	23	<b>30</b>	<b>3.3</b>	<b>7</b>	1.51	1.812	43	.077
	<i>Male</i>	22	<b>26</b>	<b>2.8</b>	<b>7</b>	1.52			

Table 1 shows that In the case of teacher efficacy both groups are between slightly agree and agree level (3.8 and 3.6). In contrast in MC females are in the slightly agree and agree level (3.3) and males are between disagree and slightly agree (2.8).

Item analysis was conducted on the items hypothesized to assess the independent items of teacher efficacy and curriculum instruction. In teacher efficacy there are two items that show major discrepancies. Females disagree twice as much as males in the set of data “too much emphasis is place on multicultural awareness and training.” (Q2r) In contrast, Q10, “Multicultural awareness is relevant for the subject that I teach”. Females agreed 25% more than males. No major difference can be seen in the other items of teacher efficacy (see Table 2).

*Table 2 Teacher Efficacy*

Efficacy	Female		Male		Agreement difference
	SD+D	A+SA	SD+D	A+SA	
Q2r-Too much emphasis is place on multicultural awareness and training	8.3	83.3	20.0	33.3	<b>50</b>
Q5- it is important to receive ongoing cultural diversity and sensitivity training	19.4	48.4	8.3	58.4	-10
Q9- Teachers have a responsibility to incorporate culturally relevant activities into their curriculum	3.3	73.3	16.7	66.7	6.6
Q10 - Multicultural awareness is relevant for the subject that I teach	6.9	79.3	22.7	54.6	<b>24.7</b>
Q11- . Multicultural awareness assists/would assist me in being more effective at my job.	23.3	53.4	17.4	47.8	5.6

Table 3 shows an item analysis of multicultural curriculum of the 9 items. Q12, 66% of females believed that the curriculum reflects the various learning styles of students within the school in comparison to 35% of males. In reference to Q13, 48% of females believed that the curriculum provides continuous opportunities for students to develop a better sense of their

ethnic and cultural background in comparison to 21% of males. In reference to Q14, 52% of females believe that the curriculum uses multiple perspectives to explain the experiences of various ethnic, cultural, gender and linguistic groups as compared to 25% of males. In reference to Q15, 10 % of females believed that opportunities are provided for students to participate in activities from diverse cultural groups as compared to 50% of males. In reference to Q18, 38% of females believed that instructional materials are examined for bias across gender, ethnic, and cultural lines as compared to 25% of males. In reference to Q19, 66% of females believe that school assemblies and holidays observed reflect the multiethnic and multicultural diversity in the United States as compared to 39% of males (See Table 3).

In conclusion, Table 3 shows that females agree at least 25% more than males in 4 of 9 items. Interestingly, males agree 40% more than females in one of 9 items. “Opportunities are provided for students to participate in activities from diverse cultural groups.”

Table 3 Multicultural Curriculum

Multicultural Curriculum	Female			Male			Dif Agreement (Female-Males)
	SD+D	SLA	A+SA	SD+D	SLA	A+SA	
Q12. The curriculum reflects the various learning styles of students in the school.	10.3	24.1	65.5	30.4	34.8	34.8	<b>30.7</b>
Q13. The curriculum provides continues opportunities for students to develop a better sense of their ethnic and cultural background.	37.0	14.8	48.1	41.7	37.5	20.8	<b>27.3</b>
Q14. The curriculum uses multiple perspectives to explain the experiences of various ethnic, cultural, gender, and linguistic groups.	33.3	14.8	51.8	50.0	25.0	25.0	<b>26.8</b>
Q15. Opportunities are provided for students to participate in activities from diverse cultural groups.	62.1	27.1	10.3	29.2	37.8	50.0	<b>-39.7</b>
Q16. The assessment procedures used with students reflect their cultural values.	42.9	28.6	28.6	43.5	34.8	21.7	6.8
Q17. There are evaluations of the goals, objectives and curricular used in teaching multicultural education.	55.6	11.1	33.3	62.5	25.0	12.5	<b>20.8</b>
Q18. Instructional material is examined for bias across gender, ethnic, and cultural lines.	29.2	33.3	37.5	25.0	50.0	25.0	12.5
Q19. School assemblies and holidays observed reflect the multiethnic and multicultural diversity in the United States.	24.1	10.3	65.5	34.8	26.1	39.1	<b>26.4</b>
Q21. The bulletin boards in my building reflect cultural diversity.	20.7	41.4	37.9	30.4	30.4	39.1	-1.2

## Discussion and Implications

In Table 2 females showed they disagreed with the item “Too much emphasis is placed on multicultural awareness and training.” Males in a 2 to 1 ratio think “too much emphasis is placed on multicultural awareness and training.” Table 3 indicated that females agreed at least 25% more than males in 4 of the 9 items. Interestingly, males agreed 40% more than females in one of the 9 items: “Opportunities are provided for students to participate in activities from diverse cultural groups.” A multicultural curriculum as explained by Shade and New (1993) indicated that when teachers include multiple perspectives to teach, they increase their cultural competency. In this study, female teachers are more prone to include multiple perspectives in their instruction; inferring more multicultural training should be offered to involve their male contemporaries. As it pertains to teachers’ efficacy, our study found there is no significant difference across gender, which echoes Gorsky, Davis, and Reiter (2012) findings on self-efficacy and multicultural education.

Diversity across various domains in our schools is a reality and addressing students’ academic needs is necessary, as students must be prepared for school and beyond. Evidence increasingly indicates that multicultural education makes schooling more relevant and effective for students when instructional practices guide students through engaging activities that promotes critical thinking academically and socially (Mc Carty, 2002; Gay, 2002; Moll, 1992; Ladson-Billings, 1995). Using one’s *funds of knowledge* advances toward social justice; yet, it requires having an educational system that provides opportunity for all students. Leadership practices that include supervision of instruction that challenges misconceptions about diverse

student population can inform teacher's multicultural awareness and knowledge. To address the academic needs of students from various cultural groups, leaders should conduct targeted professional development according to gender, as awareness and disposition may vary as illustrated in this study. This professional development may include elements that speak to multicultural curriculum and teacher efficacy, as they both play an important role in the process of incorporating strategies that address cultural diversity in our schools.

The findings from this study were limited to a single school district with predominantly White teachers. However, as noted by Hill-Jackson (2007) a major obstacle in teacher preparation programs arising from this mismatch of teacher and student cultures is the ability to facilitate a critical consciousness. This includes the ability to analyze the world and employ equity pedagogy in pre-service teachers who are resistant to diversity issues. Further studies with more diverse faculty are recommended.

The United States population is rapidly growing in a variety of diverse categories, signaling the need for continued research in these categories and educational attainment. Educational researchers addressed the issue of multicultural education in the classroom as it relates to teacher student relationship and bringing awareness to various cultural competencies. It is important that scholars continue to examine the implementation of multicultural education in every field of education that will prepare students for school and beyond. To prepare students to participate in the complete social structure as adults including social, political, and economic engagement, they must be prepared academically through the schooling process in their formative years. Leadership responses, then, require increasing teacher's multicultural competency through a multicultural curriculum regardless of race or ethnicity or gender of the teachers.

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## Hawaii International Conference on Education 2014 Proceedings

**Title of Submission:** Pedometer Step Counts in High School Multiple Disability Classrooms.

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### **Abstract:**

Research has found that adults with cognitive impairments have inferior fitness levels than those without impairments (Lavay, Zody, Solko & Ezra, 1990; McCubbin & Jansma, 1987, Zhang, Piwowar, and Reilly, 2009). Many facets such as work, maintaining a household, cooking, self-care and recreation require the individual to possess a certain degree of physical stamina (Graham & Reid, 2000). Individuals with an intellectual disability need an adequate amount of fitness to contribute to work-related tasks as well as to enjoy the benefits from participation in recreation activities (Fernhall, Tymeson, Webster, 1988). Reid and Montgomery (1999) noted the following factors as attributing to low fitness levels for individuals with cognitive impairments: Sedentary lifestyle and few opportunities to participate in structured programs (Hoge & Dattilo, 1995); Physical characteristics (e.g. short stature) (Dobbins, Garronb & Rarick, 1981; Reid, et al., 1985); Lack of coordination and efficiency (Seidl, Montgomery, & Reid, 1989); Lack of motivation during testing and a tendency to stop when uncomfortable (Reid et al., 1985; Rimmer, 1994).

The purpose of this study was to examine the overall school day physical activity levels, as measured by pedometer data, of 31 High School Students enrolled in Multiple Disability classrooms during 16-weeks of the study. This project supplied each student with a Omron HJ-720-ITC pedometer to be used during the school day to track physical activity, with the goal of achieving 10,000 steps per day ([www.shapeup.org](http://www.shapeup.org), Hellmich, 1999; Quittner, 2000). Tracking the student's data (e.g.: steps, calories burned, aerobic

steps, and distance) through exercise, then charting their progress individually and as a whole will bring cross-referenced learning into the curriculum (Gao, Lee, Solomon, Kosma, Carson, Zhang, Domangue, and Moore, 2010). Physical activity has been found to increase academic achievement, academic behaviors, help individuals regulate and there are indicators it has a positive affect of cognitive skills and attitudes (Perry and Hambrick, 2008; Uhlrich and Swalm, 2007; CDC, 2010).

Thirty-one students enrolled in one of five Multiple Disability (MD) (WNHS, WCHSA, WCHSB, WSHSA, WSHSB) Classrooms which were housed in the three Midwest city high schools, were assigned a downloadable Omron HJ-720-ITC pedometer. In two instances, students were not independently mobile, and they were not included in this study. The APE teacher met with each student to measure each individual's stride length, weight and set the pedometer accordingly. The students wore the pedometers during the school day (maximum 7 hours) for 16 weeks. The pedometer data recorded individual steps, number of days the pedometer was worn, the aerobic steps taken (e.g. 10 consecutive minutes of movement), aerobic time in minutes, number of calories burned, distance walked and fat burned. The purpose of this study was to examine the overall school day physical activity levels, as measured by pedometer data, of High School Students enrolled in Multiple Disability classrooms. Students recording 10,000 steps on any given day, received a heart sticker to display in the classroom.

Intervention Specialists' fear of losing (or flushing) the pedometers impacted the length of time students were able to record data during the school day. The students' alternative schedules (e.g. community days, worksite days, late arrivals or half/day attendance) impacted the length of time students were able to record data. Except for rare instances, students were not motivated to achieve the 10,000 step daily goal and lack of student motivation resulted in a tendency to stop moving when uncomfortable. Students receiving Adapted Physical Education, those who had a pedometer step goal or treadmill goal, and those who participated in general physical education were able to accumulate a higher number of pedometer steps and aerobic steps.

This study revealed that in general students enrolled in the five multiple disability classrooms moved very little during the school day. This is especially concerning when taking into account the growing body of research focused on the association between school-based physical activity, and academic performance among school-aged youth ([http://www.cdc.gov/HealthyYouth/health\\_and\\_academics/index.htm](http://www.cdc.gov/HealthyYouth/health_and_academics/index.htm)). Based on these general findings, further study is warranted specifically focusing on obtaining full-day pedometer step data including community days, worksite days and after school hours to determine how much physical activity students receive.

## Hawaii International Conference on Education 2014 Proposal Proceedings

**Title of Submission:** The Induction Process for New PETE Faculty: What You Don't Learn in Graduate School!

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### **Abstract:**

Addressing a new environment, workload and requirements, and the culture of one's place of employment can be a very overwhelming situation. It is often the case when everything is new and unfamiliar. This session will provide an overview of duties and responsibilities that are often connected to research, teaching, and/or service requirements that were not necessarily learned or performed in total as part of one's graduate work. The idea of learning on the job is very true for new faculty and it is often the "new person" who is asked to do many tasks because being new also means it's more difficult to say "no". These tasks are often presented under the guise of meeting requirements for tenure and promotion.

Navigating through the processes of being a new faculty member, personalities of colleagues, staff, and students, and learning traditions within a department can be challenging enough, let alone simply overwhelming if left to face it alone. This poster seeks to facilitate discussion amongst interested PETE faculty of all ranks and years of experience to address those duties and responsibilities often assigned to new faculty. Whether it be the means of perpetuating a rite of passage practice "you need do this because I did when I was new" or instituting practices we often employ for new teachers, this is a discussion that needs to occur if we are to retain and nurture new faculty and their growth to continue being productive and involved tenured faculty. In many instances assignments like writing a report for accreditation, coordinating all assessments for accreditation and institutional purposes, or handling advising for all undergraduate majors, often do not completely align with requirements for tenure and promotion. Depending on the Carnegie status of the institution, it is often one's research and publication record that are valued rather than teaching excellence or service.

## Investigating the Relationship between Math and Science Achievement:

### Parallel Process Model

#### **Introduction**

Very little research on the relationship between mathematics and science achievement has been available to us. Instead, attention has focused on achievement in either math or science, independently of each other (Robitaille & Beaton, 2002). In most studies, the investigation was conducted to show the relationship between instructional practices and student achievement within a certain discipline itself (i.e., mathematics or science). For example, it was revealed that the use of reform-oriented instructional practices in math and science is associated with higher student achievement (RAND, 2006). Historically, however, mathematics development has closely been linked with the sciences and the methods of mathematics have dominated the theoretical divisions of the sciences (Browder, 1988). One extreme view saw that science ultimately resolves into mathematical modeling (Harpending, 1985). In addition, since parents are children's first teachers, it can be hypothesized that parents' education level would probably have an effect on their children's initial scores and/or the growth rates of math and science achievement. Furthermore, a 2005 study by the Institute of Social Research at the University of Michigan found that a parents' education directly affects their children's standardized achievement testing scores. This research will show the relationship between math and science achievement, the effect of parents' education level, and what kind of relationship the growth model will be.

My hypothesis was math initial score and mothers' educational level will have more effect than fathers' education level on the growth rate of science and the initial scores respectively because mothers, in general, tend to have more time than fathers with their children and therefore mothers are more concerned with their children's education. Another hypothesis was the growth model will show a non-linear relationship because the contents

they learn tend to be more complicated and difficult as they move up to higher grade.

## **Methods**

### **Participants**

The data set used for this study was from Cohort Two of the Longitudinal Study on American Youth (LSAY), a national sample of approximately  $N=3,000$  7<sup>th</sup> grade students in public schools that served as feeder schools to the same high schools in which Cohort One was enrolled. The LSAY is a two-cohort longitudinal study of a national sample of approximately 5,000 young adults, now 38 to 41 years of age. The LSAY was launched in the fall of 1987 with national probability samples of 7<sup>th</sup> and 10<sup>th</sup> grade students in public schools throughout the United States. The data set contains six years (i.e., from grade 7 through 12) of math and science achievement data and mothers' and fathers' self-reported highest degrees earned.

### **Variables and Data Screening**

LSAY students were given math and science achievement standardized tests each fall administered by Northern Illinois University and one parent of each LSAY student was interviewed each spring by telephone. The math and science scores were continuous variables measured on a 100-point scale. Parents' education level was measured on a 5-point ordinal scale from 1 = *Lower Than HS diploma* to 5 = *Advanced degree*.

Univariate normality was checked by examining skewness values and histograms. To identify univariate outliers, box-and-whisker plot was utilized. Traditionally, multivariate normality is assumed when the assumption of univariate normality is satisfied. To further identify multivariate outliers, Mahalanobis distances (Mahalanobis, 1936) were calculated. Multicollinearity amongst variables was assessed by examining the Pearson correlation coefficient for each pair of variables, the variance inflation factor (VIF) and tolerance. A correlation coefficient which is greater than .80 ( $r > .80$ ), a VIF value ( $\frac{1}{1-R^2}$ ) that is greater

than 10 ( $VIF > 10$ ), and a tolerance value ( $1-R^2$ ) smaller than .10 (tolerance  $< .10$ ) may indicate a multicollinearity problem. Bivariate scatterplots were examined to check the assumption of linearity and residual plots were also assessed to check the assumption of homoscedasticity.

## **Procedure**

The growth rates of math and physical science scores from grade 7 through 12 (from 1987 through 1992) were examined and the effect of mothers' and fathers' education level on the initial scores and annual change over time was investigated. A parallel process model with two centered covariates (i.e., mothers' education level and fathers' education level) and with equal intervals was estimated using Mplus 7.0 (Muthén & Muthén, 1998-2013). Math and physical science scores were regressed on mothers' and fathers' education level. The unstandardized loadings on the intercept were all fixed to 1 and the slope loadings were fixed to constants beginning with 0 (7<sup>th</sup> grade) and ending with 5 (12<sup>th</sup> grade). This model was compared to another parallel process model with freely estimated time scores to get a better model using Maximum likelihood estimator with robust standard errors as the estimator to include all available information. The guidelines to interpret the model fit indices were as follows: (1) a non-significant  $\chi^2$  (Fabrigar, Wegener, MacCallum, & Strahan, 1999); (2) a Comparative Fit Index (CFI) and a Tucker-Lewis index (TLI) greater than 0.90, or preferably above 0.95 (Bentler, 1980); (3) a Root Mean Square Error of Approximation (RMSEA) less than 0.08, or preferably less than .05 (Steiger & Lind, 1980); and (4) a Standardized Root Mean Square Residual (SRMR) of .08 or preferably less than .05 (Brown, 2006).

The physical science and math slopes were regressed on the math and physical science intercepts respectively. The covariance of the math and physical science slopes was also examined (see Figure 1).

## Results

Univariate normality tests showed that there were no severely skewed distributions by examining skewness values and histograms. Multivariate normality was also assumed since univariate normality was satisfied (Abu-Bader, 2010). A total of 26 univariate outliers were found by examining box-and-whisker plots. *Mahalanobis distances* showed there were 33 multivariate outliers,  $D^2 = 36.12$ ,  $p < .001$ . These outliers were not excluded because they took a very small proportion, considering the large number of cases ( $N=3,038$ ), and did not much influence the normality.

The final model showed adequate fit except RMSEA and SRMR: CFI = .92; TLI = .93; RMSEA = .11 (90% CI = .11-.12); SRMR = .19;  $\chi^2(75) = 2737.55$ ,  $p < .001$  (see Table 3). The SRMR and RMSEA values indicate there is still unexplained error in the model and this would probably be the biggest weakness of this model. The significant chi-square value may be due to sample size.

The growth model showed curvilinear relationship in the slopes of math and physical science scores (i.e., as they get older, the growth rates of math and physical science tend to be decreasing). When the slopes of math and physical science were regressed on the intercepts of physical science and math, the slope of physical science was more significantly predicted by the intercept of math (7<sup>th</sup> grade),  $b=.13$ ,  $p<.001$ . When father and mother had average education level (i.e., 2.5), the intercepts of math and physical science were 50.56 and 50.71 respectively in 7<sup>th</sup> grade. These results were almost the same as the means of math and physical science (i.e., 50.59 and 50.72).

When the intercepts of math and physical science were regressed on fathers' and mothers' education level, there will be a 1.65 and 1.20 expected unit change in 7<sup>th</sup> grade math and physical science score, for every 1 unit change in fathers' education level and there will be a 2.07 and 2.07 expected unit change in 7<sup>th</sup> grade math and physical science score, for

every 1 unit change in mothers' education level. Mothers' education level was more associated than fathers' education level with 7<sup>th</sup> grade math and physical science score. The association of mothers' and fathers' education level with the slope of math was not significant,  $p=.57$  and  $.81$  respectively.

As expected, math growth and physical science growth significantly co-varied,  $r= .46$ ,  $p<.001$ , indicating math and physical science growth are likely to have a positively moderate to strong effect on each other.

### **Discussion**

In this study, how closely the initial scores and the growth rates of math and science were related with each other was investigated. In addition, since parents are considered as children's first teachers (Pfannenstiel & Zigler, 2007), it was hypothesized that parents' education level would probably have an effect on their children's initial scores and/or the growth rates of math and/or science achievement. Therefore, mothers' and fathers' education level were added to the growth model for analysis. Finally, what kind of relationship the growth model shows, whether it is linear, quadratic, or exponential was examined. Overall, there was a positive increase in math and physical science scores over time due to learning, natural maturity (Gakhar, 2003), or both. However, the growth rate has been decreasing (i.e., curvilinear relationship), indicating the contents tend to be getting more and more complicated and difficult as they move up to higher grade. Math initial score was significantly associated with the growth of physical science score, so an effective math instructional strategy in addition to an effective science instructional strategy would probably be desirable to improve science achievement. Mothers' education level is more associated than fathers' education level with math and physical science initial scores, which makes sense because mothers, in general, tend to have more time than fathers with their children and therefore mothers are more concerned than fathers with their children's education (Walker,

1993-2006).

Fathers' education level was negatively associated with physical science growth, which did not make sense. It might be due to the problem of data collection. Since one parent of each LSAY student was interviewed each spring by telephone, mothers had more probability than fathers to receive a call and therefore fathers' education level was probably collected in more indirect way through mothers' response. Furthermore, students' 1987 report of fathers' and mothers' education was used if no information was collected directly from fathers and mothers. In this regard, fathers' data were more likely to be incorrect than mothers' data. However, further study would be recommended.

This study was meaningful in that it tried to reveal the relationship between mathematics and science achievement using one of the advanced statistical methodologies (i.e., parallel process modeling) with real data, which has been very rarely pursued. Findings showed that both the initial score and the growth rate of math were significantly associated with science achievement. Therefore, it would be really important for schools to try harder to establish the foundation of mathematics from the elementary level or at least no later than the beginning of secondary level not to fall behind in math and science afterwards even though most schools are trying to do now. Another important thing was that this study revealed the statistically significant positive association of mothers' education level with their children's math and science achievement. In this regard, family services, that is, providing families with the knowledge and skills in the areas of effective parenting, especially for mothers, would be essential to improve students' math and science achievement. Finally, the growth model of math and physical science scores did not show linear or quadratic relationship. The result revealed that the slope of the math and physical science scores was in the middle of linear and quadratic relationship. In other words, the growth in students' math and science achievement has been decreasing as they advance toward higher grade. Although this

phenomenon makes sense, more careful and profound strategies would be recommended such that students at the end of secondary level could not be too much frustrated with their slow pace of improvement.

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Appendix 1: Tables

Table 1

*Correlation Matrix of Indicators for A Parallel Process Model (n=3,038)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
AMTHI MP	-													
CMTHI MP	.84*	-												
EMTHI MP	.82*	.89*	-											
GMTHI MP	.80*	.86*	.92*	-										
IMTHI MP	.78*	.83*	.89*	.93*	-									
KMTHI MP	.78*	.82*	.88*	.92*	.95*	-								
APHYI MP	.67*	.65*	.65*	.64*	.64*	.64*	-							
CPHYI MP	.68*	.73*	.71*	.71*	.70*	.70*	.76*	-						
EPHYI MP	.66*	.71*	.74*	.72*	.72*	.71*	.72*	.85*	-					
GPHYI MP	.66*	.70*	.73*	.73*	.73*	.72*	.72*	.81*	.87*	-				
IPHYIM P	.67*	.71*	.75*	.75*	.76*	.76*	.72*	.80*	.86*	.91*	-			
KPHYI MP	.67*	.70*	.74*	.74*	.76*	.77*	.71*	.77*	.83*	.87*	.93*	-		
MOTHE D	.31*	.29*	.31*	.31*	.30*	.30*	.30*	.29*	.28*	.31*	.31*	.30*	-	
FATHE D	.30*	.29*	.30*	.30*	.28*	.29*	.26*	.26*	.24*	.25*	.26*	.26*	.47*	-
<i>M</i>	50.59	54.08	58.28	62.63	65.38	66.03	50.72	54.90	58.20	60.87	63.15	65.08	2.35	2.64
<i>SD</i>	10.21	11.06	12.44	13.22	13.60	14.53	10.23	11.27	11.48	11.92	12.71	13.16	1.05	1.25

*Note.* \* $p < .01$ .

Table 2

*Descriptive Statistics*

Variable	Time Point	<i>M</i>	<i>n</i>	<i>SD</i>
Math/Physical science Scores	Grade7	50.59/50.72	3028/3038	10.21/10.23
	Grade8	54.08/54.90	2730/2731	11.06/11.27
	Grade9	58.28/58.20	2678/2677	12.44/11.48
	Grade10	62.63/60.87	2603/2609	13.22/11.92
	Grade11	65.38/63.15	2178/2215	13.60/12.71
	Grade12	66.03/65.08	1878/1876	14.53/13.16

*Note.* Used data from the Longitudinal Study of American Youth (LSAY).

Table 3

*Fit Statistics for the Parallel Process Models*

	$\chi^2$	<i>df</i>	$\Delta\chi^2$	$\Delta df$	RMSEA (90% CI)	SRMR	TLI	CFI	$\Delta CFI$
Fixed time scores	4131.16***	83			.13 (.13 - .14)	.21	.89	.90	
Freely estimated time scores	2737.55***	75	1393.61*	8	.11 (.11 - .12)	.19	.93	.92	.02

*Note.*  $\chi^2$  = chi-square test of model fit; CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root-mean square error of approximation; SRMR = standardized root mean square residual.

\* $p < .001$ .

Table 4

*Estimates of Growth in Math/Physical Science with Mothers'/Fathers' Education Level as**Time-Invariant Covariates*

	<i>Estimate</i>	$\Delta E$	<i>SE</i>	<i>t</i>
Math/Physical Science scores at grade 7 (Intercept)	50.56/50.71		0.19/0.18	269.44***/276.05***
Mean growth (Slope)	-1.86/-2.29		0.28/0.36	-6.66***/-6.43***
Variance				
Intercept	78.89/65.35		2.41/2.22	32.73***/29.50***
Slope	2.73/4.60		0.20/0.34	13.95***/13.57***
Growth scores	<i>Estimate</i>	$\Delta E$		
7th grade	0†		-	-
8th grade	1†		-	-
9th grade	2.19/1.74	1.19/0.74	0.06/0.04	39.37***/39.48***
10th grade	3.35/2.33	1.16/0.59	0.09/0.06	37.95***/38.78***
11th grade	4.10/2.90	0.75/0.57	0.11/0.08	37.11***/38.05***
12th grade	4.34/3.29	0.24/0.39	0.12/0.09	36.60***/37.00***
Intercept on MOTHED	2.07/2.07		0.20/0.19	10.61***/11.03***
Slope on MOTHED	-0.03/0.02		0.05/0.06	-0.57/0.34
Intercept on FATHED	1.65/1.20		0.16/0.16	10.09***/7.61***
Slope on FATHED	-0.01/-0.12		0.04/0.05	-0.24/-2.29*
Slope1 on Intercept2	0.11		0.01	17.19***
Slope2 on Intercept1	0.13		0.01	16.40***
Slope2 with Slope1	0.46		0.03	17.59***

*Note.* †Fixed by the researcher. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . Fit indices:  $\chi^2 = 2737.55_{(75)}$ , CFI= 0.93, TLI= 0.92, RMSEA= 0.11, SRMR = .19.

Appendix 2: Figures

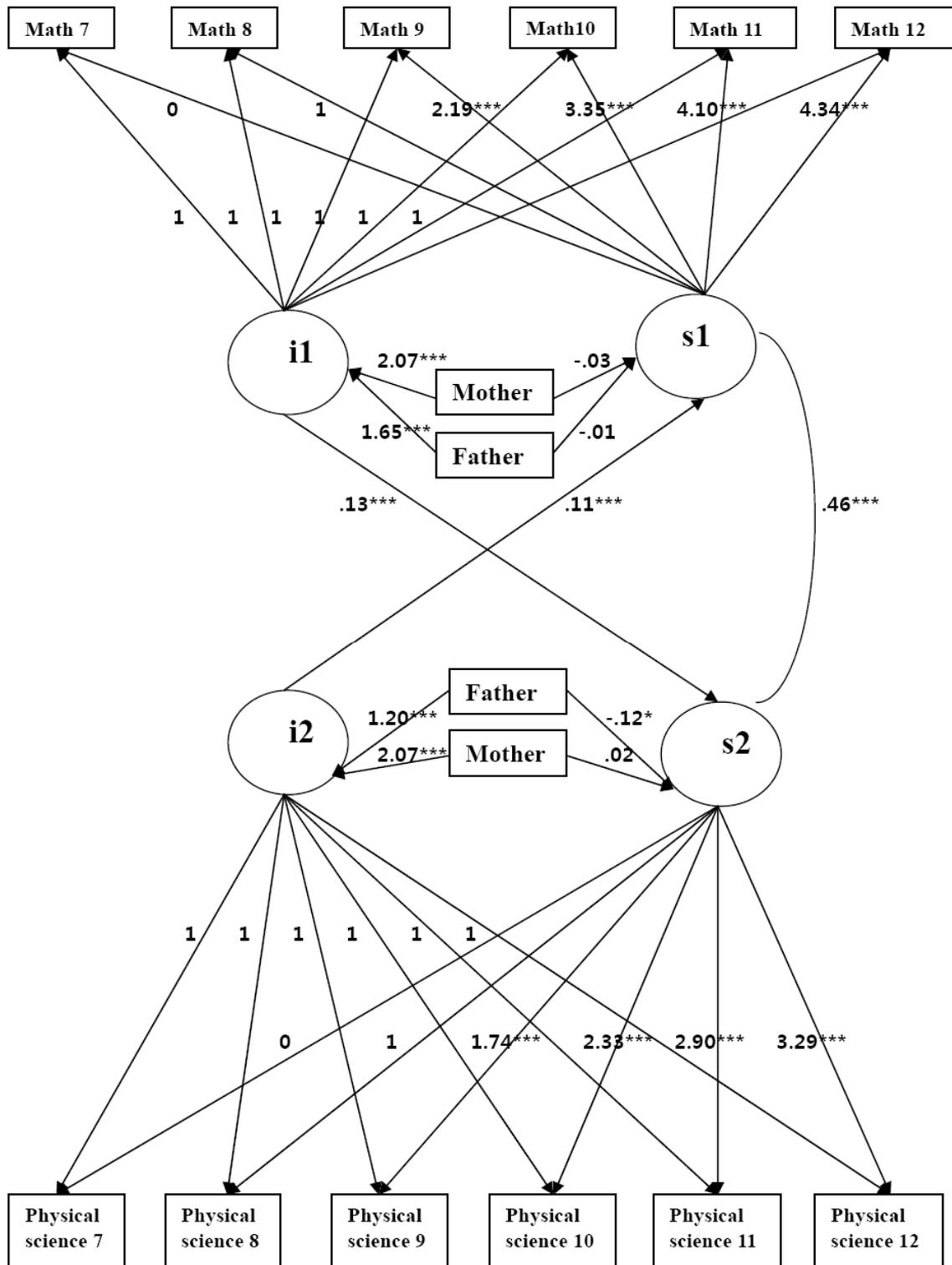


Figure 1. Parallel process model of math/physical science with mother's/father's education

level.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

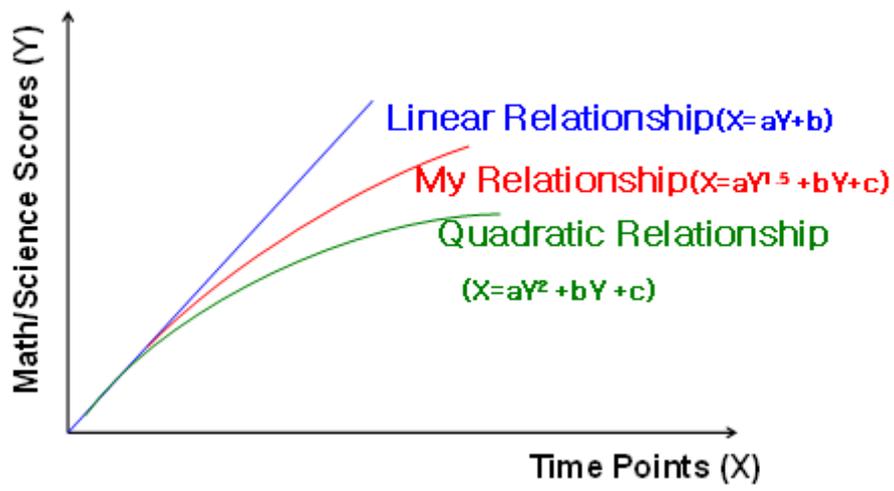


Figure 2. Graphic display of growth in math/physical science scores over time.

Title:

Combining innovative technologies and the high-fidelity simulation mannequin Harvey®, The Cardiopulmonary Patient Simulator, to prepare pre-licensure nursing students for the National Council of State Boards of Nursing Licensure Examination

Topic: Health Education

Presentation format: Poster Session

Description:

The use of simulation mannequins within nursing labs is quickly becoming the standard. Providing students opportunities to learn novice and advance nursing assessment skills can be accomplished by using high-fidelity simulation mannequins such as Harvey®, the Cardiopulmonary Patient Simulator. This poster presentation will discuss the use of the high-fidelity simulation mannequin Harvey® along with the provided curriculum used in the lab setting to prepare BSN prepared candidates for the NCLEX-RN® exam.

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**Abstract**  
**Background**

Simulations are quickly becoming the standard of learning and assessment within nursing curricula on a global scale. Trends emerging within Bachelor prepared nursing programs include use of high-fidelity patient simulation mannequins. Fishman (2009) explains how “the rapidly evolving changes in simulation equipment, audio visual technology, simulation synthesis software and trends in curriculum make the proper planning and design of flexible, sustainable labs ever more complex and important” (p. 6). Providing students opportunities to learn novice and advance nursing assessment skills can be accomplished by using high-fidelity simulation mannequins such as Harvey®, the Cardiopulmonary Patient Simulator created by the Michael S. Gordon Center for Research in Medical Education, GCRME, at the University of Miami. The curriculum included with this simulation technology includes 30 different cardio-pulmonary disease states ranging from hypertension, mitral valve prolapse, and pulmonary stenosis (GCRME, 2013). Harvey® is a robust educational tool for nurse educators to use while preparing pre-licensure nursing students for the National Council State Boards of Nursing Licensure Examination, NCLEX-RN®. With the recent release of the updated NCLEX-RN® exam, a number of alternate format questions including audio questions were asked. Candidates were asked to listen to the audio file and then answer the question (NCSBN, 2013, p. 56). The use of high-fidelity simulation mannequins play a significant role in preparing candidates to master alternate question types.

**Outcomes**

This poster presentation will discuss the use of the high-fidelity simulation mannequin Harvey® along with the provided curriculum used in the lab setting to prepare BSN prepared candidates for the NCLEX-RN® exam. The nature of the research being presented is a discussion of current literature in progress and initial development of a theoretical framework for testing and ongoing research. Methodologies used will be Colaizzi’s phenomenological and analytical interpretative data approach. Upon completion of this poster presentation, the attendee will have a better understanding of the role of innovative, educational technology using high-fidelity simulation mannequins for teaching of cardio-pulmonary disease states in nursing curricula.

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# Using Scaffolding Strategies for Improving Student Science Practical Skills

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**Abstract:** Learning in the 21st century is focused on information management and students are expected to be developed as inquiry learners instead of just knowledge gatherers. As inquiry learners, they have to be observant, for example when conducting experiments in the laboratory, and to make use of information to solve or complete science-related problems or tasks. Traditionally, science practical skills are assessed through single-session laboratory-based examinations and students are prepared through drill-and-practice strategies. However, school systems around the world today have chosen to adopt course-based science practical assessment which assesses students on their abilities to identify and select appropriate hands-on skills when conducting laboratory experiments. Thus, there is a need to help students prepare for this change in practical assessment format and one established way is the use of scaffolding strategies. Although scaffolding is a tried and tested method to help students master new knowledge and skills in many school subjects, its effectiveness in school science practical work has not been thoroughly investigated. This paper reports some of the current work done in Singapore schools where the use of scaffolding strategies in preparing students for school-based practical assessment is being studied. The findings from these studies are significantly positive and do indicate the potential of scaffolding strategies in helping students become more motivated and skillful in science practical work.

**Keywords:** science, practical, skills, assessment, scaffolding, strategies

## **1 Introduction**

In recent years, assessment of students' science practical work in Singapore has been reforming to focus on the course-based development of science practical skills (over two years) instead of assessing the end-product of learning in the form of a submitted laboratory report over one assessment sitting in the usual end-of-course science practical examinations. Teachers usually prepare their students to sit for the practical examinations through a series of drill-and-practice science practical sessions. In 2006, the practical examination was replaced by the School-based Practical Assessment (or SPA) for students offering sciences as subjects in the Singapore-Cambridge General Certificate of Examination (or GCE). Students' proficiencies in science practical skills are now assessed through performing a series of experimental tasks over a two-year period for the 16-year olds (equivalent to the middle school students) sitting for the GCE Ordinary Level examination, and the 18 year-olds (equivalent to high school or college pre-university students) sitting for the GCE Advanced Level examination. Unlike practical examinations, in which students were drilled to perfect specific practical skills like those in qualitative analysis (identification of ions in unknown chemical samples) or volumetric analysis (using titration techniques to find out concentrations, in moles per litre, of unknown aqueous solutions of acids or alkalis), SPA requires students to be proficient in an array of science practical skills.

Given the broader range of skills in SPA (compared to those assessed in practical examination) it is no longer effective to train students to be competent in practical skills through drill-and-practice methods. To help students prepare for the assessment of practical skills, one established way is the use of scaffolding strategies. Although scaffolding is a tried and tested method to help students master new knowledge and skills in many school subjects, its effectiveness in school science practical work has not been thoroughly investigated. This paper is a report of a few current Singapore studies on the use of scaffolding strategies in preparing students for school-based practical assessment.

## **2 What is Scaffolding**

The idea of scaffolding to support learning was introduced more than three decades ago by Wood, Bruner and Ross (1976). The original notion of scaffolding was applied to interactions between an expert and a learner, the former was usually a teacher or a parent who provided the help needed to move the learner forward (Wood et al., 1976). In essence, it was a one-on-one interaction where the expert, being the knowledgeable and skillful one, provided just enough support the learner needed to complete an activity or task successfully. The interaction between them allowed the expert to monitor the learner's progress and provide the appropriate support. The support was then removed once the learner was in control of her/his learning. In an education context, instructional scaffolding is known to enable a child or a novice to solve a problem, carry out a task, or achieve a goal that s/he cannot accomplish on her/his own (Wood et al., 1976). The support can progressively "fade" away when there is no longer a need for it. This fading of the support, one of the key theoretical features of scaffolding, enables the learner to be responsible for her/his learning.

Over the past 35 years, the concept of scaffolding has been widely used as a metaphor to support teaching and learning. This metaphor was used to describe the support provided by parents, teachers and mentors to assist the learners to learn new concepts, master skills or raise levels of understanding. This term describes the nature of an essential support that provides temporary assistance to enable the learner to advance to the next level in knowledge and understanding (Maybin, Mercer & Stierer, 1992).

Another notion of scaffolding is “distributed scaffolding”, a term coined by Puntambekar and Kolodner (1998; in press), and it refers to instructional designs that sequence and integrate a variety of social and material supports (cited in Tabak, 2004). In this context, scaffolding refers to the titrated supports that enable learners to engage in learning through activity, such as “doing and talking science”. It helps learners perform tasks that are outside their independent reach and consequently develop the skills necessary for completing such tasks independently (Rogoff, 1990; Wertsch, 1979; Wood, Bruner, & Ross, 1976; cited in Tabak, 2004). In short, it is a collection of materials and social supports that enable learners to learn discipline such as science by “doing science”.

Tabak (2004) described distributed scaffolding (Puntambekar & Kolodner, 1998) as an emerging approach in the design of supports for rich learning environments that are intended to help students develop disciplinary ways of knowing, doing, and communicating. In this scaffolded environment, multiple forms of support are provided through different means to address the complex and diverse learning needs of the learners. It is the metaphor that made the multiple supports explicit, in contrast to the original conception of scaffolding in relation to parent-child interactions, where there is just a single means of support. Her framework formalised distributed scaffolding and delineated the different forms or patterns that the scaffolding can take and the functions that these different patterns perform. Distributed scaffolding is envisaged in different ways and differentiated scaffolds, redundant scaffolds and synergistic scaffolds are the three complementary patterns associated to it.

Redundant scaffolds have been explicitly identified as a design strategy for distributed scaffolding. It involves different means of support that target the same need but are enacted at different points in time in the curriculum to provide titrated levels of support (Puntambekar & Kolodner, 2005). As a result of the difference in student competencies, there is a need for different types and levels of support to meet the particular learning needs.

When scaffolding is provided in multiple formats, there are more chances for students to notice and take advantages of the environment’s affordances (cited in Puntambekar & Kolodner, 2005). Providing good and effective scaffolding may mean that a learner is provided with support that can enable him or her to function independently. The best scaffoldings are the ones that can be faded because the learner will eventually (through the scaffolds) internalise the processes s/he is being helped to accomplish (Rogoff, 1990; cited in Puntambekar & Hubscher, 2005). Tabak (2004) argues that the tasks in these contexts are more complex and extend over longer periods of time than the tasks depicted in the classical examples of scaffolding. As such, scaffolding needs to

change accordingly over time in response to the changing needs of students and the curriculum.

Studies have also shown that question prompts, a type of instructional supports, can effectively promote students' knowledge integration (Davis & Linn, 2000). Different question prompts may serve different needs and purposes for students. Davis and Linn (2000) also studied the effects of guided questions on metacognition skills, knowledge integration, and problem-solving. Also, reflective prompts were used to support knowledge integration and encourage reflection at a level that students did not generally consider. This paper documents an initial effort to apply scaffolding in the learning of school science, especially how it can be used in the laboratory to help students learn chemistry practical skills.

### **3 Scaffolding in the Recent Years**

In terms of learning, teachers are responsible for providing the scaffolding for classroom instruction. Scaffolding used in the classroom is only a temporary support which has to be removed when learners are able to independently demonstrate their competence and articulate knowledge without the support. To distinguish scaffolding from just mere help given by a teacher to accomplish a task, there should be some evidences that the teacher has intention for the learner to develop a specific skill, learn a specific concept or achieve a particular level of understanding. There should also be evidences indicating how the teacher could monitor a learner's success in a task or on how the teacher intends to measure the learner's increased competence or improved level of understanding of a specific learning activity (Maybin, Mercer, & Stierer, 1992).

Many of these evidences are reported by researchers and educators in their studies using various forms of scaffolding or scaffolding experiences or environments. As a result of the frequent use of this metaphor in the teaching and learning, it has been re-defined and re-interpreted in relation to the learners' needs in these studies. However, the main idea of it being a form of support for learners' attempts to achieve specific learning goals under a wide range of learning environments remains unchanged. Also, its popularity in classroom instruction suggests that teachers do believe it contributes to effective classroom instruction and the beneficial effects on school curriculum. Few teachers and educators would have any dispute over the importance of scaffolding in their own learning environments. Despite the many changes and adaptations, most forms of scaffolding, if not all, still align with Wood's idea of providing a just-in-time learning opportunity to help the learner complete the task and reach the goal per se (Wood et al., 1976).

This paper aims to (i) present the various forms of scaffolds and scaffolding strategies that have been used in classrooms to help students learn curriculum-assessed practical skills, and (ii) share recent experiences on the use of scaffolds in science education in some studies conducted in Singapore schools, including some of the outcomes from these recent studies in which scaffolding were used to support learners as they learn laboratory experimental skills in the chemistry laboratory.

#### 4 Recent Studies on Scaffolding in Singapore Schools

Unlike the wide ranging literature on scaffolding that generally helps students learn in school, there are fewer studies involving the use of scaffolding to help students learn science practical skills in the school laboratory. Two recent studies in Singapore schools on the effectiveness of using scaffolding in school science laboratory (Au, 2009; Au & Tan, 2010) had shown that this is a potential area for more extensive and intensive research to be done. The two studies investigated the effectiveness of scaffolds in laboratory as a means for teachers to help students learn and master curriculum-assessed chemistry practical skills. The focus of both studies was on the types of scaffolds provided during chemistry laboratory practical lessons. Both adopted the concept of distributed scaffolding, an emerging practice among researchers interested in supporting science learning (Raes et al., 2011; Puntambekar & Kolodner, 2005) and others such as in history (Li & Lim, 2008). This concept involves developing ways of knowing, doing, and communicating and entails a large assortment of learning or support needs (Tabak, 2004). The different types of scaffolds used in her study are teacher support, procedural facilitation (a pedagogical technique used in the study of Scardamalia and Bereiter, 1985, cited in Pea, 2004), prompts and questions, and reflection prompts (Davis, 2003). Some of these scaffolds are used as redundant scaffolds. Redundant scaffold is one of the three patterns of distributed scaffolding. As a result of the difference in student competencies, there is a need for different types of support in the chemistry laboratory to meet the particular learning needs. Redundant scaffolds provide the multiple scaffolds for the same needs to the students who may have missed opportunities to benefit from a particular scaffold (for example, missing out parts of the teacher's verbal instructions in the laboratory) and to some others who may need more support to perform the tasks (Tabak, 2004).

Similarly, all students performing science practical tasks in the laboratory can also benefit from both redundant and multiple scaffolds. The different types of scaffolds supporting the same learning needs were incorporated at different points in the curricular materials used in the studies. Thus the multiple supports used allowed students to receive more assistance to complete a task. Initial findings of an earlier study on two classes of grade 9 chemistry students (Au, 2009) indicated that students who had been through scaffolded lessons performed better than those who did not. These findings suggest that scaffolds may enhance student performance in chemistry laboratory and the students can function independently when the support is removed (faded).

A survey was conducted with the two classes of 63 students performing a set of experiments with scaffolds (S1-S6) provided to learn six common skills (Au & Tan, 2010). The findings of the survey conducted indicate that a large number of students in both classes viewed scaffolds that were provided in the scaffold environments of chemistry laboratory were helpful in supporting the learning of practical skills and useful for reflection on skills performed. This is observed in the comparable number of "Strongly Agree, SA" and "Agree, A" responses from both classes. Table 1 shows the percentage range of responses for both classes.

Table1: Percentage of responses to Scaffolds S1 – S6

Class	% Responded (SA & A)	SA (%)	A (%)
I (33)	85 – 97	42 – 49	33 – 51
II (30)	87 – 93	60 – 73	20 – 33

The percentage response to SA in Table 1 indicates that class II students have a higher percentage response than class I. This finding may indicate that a greater number of class II students find scaffolding helpful in chemistry laboratory. A larger number of SA responses from class II may be attributed to students' experiences in both no scaffold and scaffold environments for chemistry laboratory. Class II students were not provided with scaffolds in the first round of the study but after the second round with scaffolds, more students of the class could make a distinct comparison between scaffold and no scaffold laboratory environments.

An extension of the research on distributed scaffolding followed after the earlier studies. The project was conducted with two classes of Secondary 3-4 (Grade 9-10) students (n=73) over a 2-year chemistry curriculum. This project probed the effectiveness of distributed scaffolding in the curricular materials for the Grades 9 -10 chemistry laboratory. In this extended study, multiple supports were provided to scaffold the learning of practical skills with the end goal being the completion of the chemistry experiments safely using the appropriate laboratory techniques. The multiple supports provided involved guiding questions and reflective prompts (Davis & Linn, 2000) and instructions which are procedural and direct in nature.

The extension project involved the “non-scaffolded” class and the “scaffolded” class. Each class carried out 11 chemistry experiments over a 12-month period. Each experiment was a one-hour long and was designed to be aligned to the formal chemistry curricular schedule. Only the intervention class was given chemistry laboratory materials supported by distributed scaffolding instructions or notes. After carrying out a series of five to six experiments (non-scaffolded or scaffolded) the classes sat for a one-hour chemistry laboratory (non-scaffolded) test. For the scaffolded classes, the scaffolds were deliberately and gradually removed over the series of five to six experiments until they sat for the final chemistry laboratory (non-scaffolded) test. This tapering off of scaffolds aligns with the fading feature of scaffolding

A t-test analysis was done on the total of the two test scores of the two classes. The t-test results and the related descriptive statistics are summarised in Table 2.

Table 2: Summary of t-test results for the scores of no-scaffold class and scaffold class

Class	No. of students	Mean	SD	t	p	E S
No-scaffold	34	13.18	2.33	-3.94	.000	0.93
Scaffold	39	15.03	1.55			

The mean score of the scaffold class (M = 15.03, SD = 1.55) is significantly higher (t = -3.94, df = 56, two-tailed p = .000) than that of the no-scaffold class (M = 13.18, SD = 2.33). The effect size, estimated with Cohen's d was .93. The findings show that a scaffold

folding environment can enhance the learning of practical skills in chemistry laboratory and that scaffolding has a large effect ( $E S = 0.93$ ) on the performance of practical work in the laboratory.

## **5 Implications and Conclusion**

The findings of the Singapore studies on the use of scaffolds in practical work have important implications on student learning of chemistry laboratory skills in school. For example, the different types of support did help students improve in their performance in chemistry laboratory tasks. These supports would be especially helpful in large classes where the teacher may not be able to effectively provide individual attention to the students. Scaffolds, like those in the worksheets used in the studies or presented visually next to instruments in the laboratory, may be effective supports to assist students in the learning and mastery of practical skills. Also, by providing different multiple scaffolds in chemistry laboratory students' learning of practical skills can be better enhanced because students have indicated that the scaffolds were helpful in their learning process. The Singapore studies have also provided new insights into how scaffolded learning environments can help improve student learning of laboratory skills. The scaffolded chemistry laboratory environment has enabled us to explore the use of different and multiple scaffolds as another teaching and learning approach to learn science practical skills in school chemistry. Nevertheless, more investigation on scaffolding the laboratory for learning science practical skills have to be done in chemistry classes before the essential features of scaffolding in the laboratory setting may be more convincingly identified.

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**Title of research: Empowering individual mind for peace education: Examining a Buddhist contribution to the development of mind for peaceful and harmonious world**

**Topic area of the submission: Educational Psychology**

**Presentation Format: Paper Session**

**Description of presentation: This research examines how a Buddhist philosophy of mind contributes to the qualitative enrichment of individual mind for peace education. Based on the three proposed concepts of mind – the conditioned mind, the unconditioned mind, and holistic mind –, it explores the empowerment of the individual mind to develop multiple ways of thinking and knowing such as critical thinking, mindfulness, contemplation, intuition, imagination, empathy and so on in collective settings to make a positive change.**

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# Insightful Models Created by Students Investigating a STEM Task

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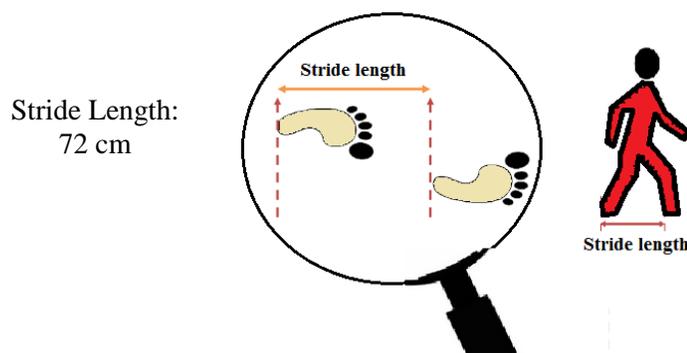
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## Abstract:

There has been a recent push to integrate mathematics into other content areas, particularly in STEM related fields. With this in mind, we taught a lesson to middle school students that integrated mathematics and archeology. The students had to develop a method to determine the height of a prehistoric person based on his/her stride. The research presented here focuses on the students' approaches to the problem with an emphasis on their generalizations. Three different methods were generated by students: 1) an additive model 2) a proportional model and 3) an advanced proportional model accounting for gender. The results indicate that students are at different levels of development but can be guided to advance their thinking. Those who struggled with the task (and used the additive model) were able to discover the problems with their model once they were asked to test the model. Students were able to problem-solve and create new models as their original models failed to work. Qualitative data are provided. This study indicates the need for students to discover on their own the limitations of models. As well, teachers should provide students with opportunities (along with time) to revise and reinvestigate.

Modeling involves identifying and selecting relevant features of a real-world situation, representing those features symbolically, analyzing and reasoning about the model and the characteristics of the situation, and considering the accuracy and limitations of the model” (NCTM, 2000, p. 303). Mathematical models are fruitful tools for many professions including scientists, mathematicians, engineers, economists, statisticians and many others.

With the importance of modeling as a center for this investigation, middle school students in Turkey were asked to solve a dilemma involving archeology and mathematics. The purpose of this STEM investigation is to have fifth grade students explore a modeling experience through an activity called “How Tall were People in Ancient Times?” which was adapted from an activity called “Lengthy Relationships” Johnson (1999). Specifically, the aim of the activity is to find the relationship between the stride length of a person and his/her height. A scenario was posed to the students: An archeologist discovered preserved ancient footsteps during a dig. The stride was 72 centimeters in length. How can we use this information to estimate the height of a person using stride length? Create a model to help the archeologists



The students followed the common phases of a modeling activity: 1) introduction, 2) exploration, 3) building of a mathematical model and 4) testing the built model (Sekerak, 2010). Qualitative data that documented students’ thinking are presented to support the results related to student thinking in this investigation.

### The Models

Students created 3 different models to address the connection between stride length and height: 1) an additive model 2) a proportional model and 3) an advanced proportional model accounting for gender.

### *The Additive Model*

The additive model was an inaccurate model that applied an additive relation between stride length and height. Using algebraic notation, students translated height length as the side length plus 100 ( $h = s + 100$ );  $h$  = height while  $s$  = stride length. Students incorrectly assumed that 100 needed to be added to each stride length to find height. Initially, students thought that their model was effective. But once they were asked to test their model, they realized that there were flaws.

Teacher Can you show me that your model is working?  
John My stride length is 59 centimeters and I am 159 centimeters tall.  
Teacher Can you show me that your model is working for other students in the classroom?  
John : His stride length is 67 centimeters and he is 152 centimeters. It is not working exactly.

### *The Proportional Model*

The proportional model presented a multiplicative relationship between stride length and height. Students averaged the ratio between stride length and height after gathering data from their classmates. Student created a model that used the following formula:  $h = 2.4s$ . They saw that a constant (2.4) was needed in the formula.

Teacher How did you find your mathematical model?  
Abby We first measured the heights and stride lengths of 21 students in the classroom. And then we found average heights and average stride lengths. Finally, we divided average heights by average stride lengths. We found approximately 2.4. If you multiply 2.4 with any stride length you would find the height of that person. It is close but not exact.

### *The Advanced Proportion Model (Using Gender)*

The final model was a proportional model that considered gender in the multiplicative relationship. These students realized that males and females have different stride lengths based on their height. The formulas were:  $h = 2.5s$  (for girls) and  $h = 2.3s$  (for boys). The data from this class can be found in the appendix.

Teacher How did you find your mathematical model?  
Maya We found in our group an average ratio for girls and boys separately. There are 21

students all together. 14 of them are girls and 7 of them are boys. The average height/stride length ratio for girls is 2.5 and for boys 2.3. So if a person is a girl then you multiply her stride length with 2.5 to find her height. If not, you multiply it with 2.3.

To further this exploration, the students were asked to interpret how the formula could be related to stride length. If a boy and girl had the same stride, who would be taller the boy or girl? Who takes shorter steps, boys or girls? Explain how that relates to the formula.

### Conclusion

While some models were more effective at predicting heights than others, the importance of this investigation was for students to recognize the limitations of their own model and make adjustments as necessary. Our recommendations are that teachers help students discover the limitations of their models through scaffolding, allowing the students to observe possible contradictions. The students also need class time to adjust and rethink their models, as this was critical for students to analytically evaluate what the model means and what the model predicts and whether or not the predictions are accurate.

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Appendix:

GIRLS DATA SET

NAME	10 strides (cm)	1 strides (cm)	Height (cm)	Height / 1 Stride
Girl A	556	55.6	154	2.769784173
Girl B	530	53	153	2.886792453
Girl C	585	58.5	136	2.324786325
Girl D	590	59	145	2.457627119
Girl E	545	54.5	147	2.697247706
Girl F	540	54	140	2.592592593
Girl G	562	56.2	145	2.580071174
Girl H	520	52	144	2.769230769
Girl I	573	57.3	151	2.635253054
Girl J	585	58.5	143	2.444444444
Girl K	630	63	142	2.253968254
Girl L	715	71.5	158	2.20979021
Girl M	647	64.7	154	2.380216383
Girl N	525	52.5	143	2.723809524
			MEAN	2.551829584

BOYS DATA SET

NAME	10 strides (cm)	1 strides (cm)	Height (cm)	Height / 1 Stride
Boy P	618	61.8	145	2.346278317
Boy Q	630	63	142	2.253968254
Boy R	630	63	144	2.285714286
Boy S	623	62.3	159	2.552166934
Boy T	627	62.7	147	2.344497608
Boy U	679	67.9	151	2.223858616
Boy V	667	66.7	159	2.383808096
			MEAN	2.341470301

**Title: Knowledge intensity in the workplace and occupations. How well does vocational education prepare for occupational requirements in working with information and knowledge?**

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**Title: Knowledge intensity in the workplace and occupations. How well does vocational education prepare for occupational requirements in working with information and knowledge?**

**1. Research objectives**

The importance of dealing with information and knowledge at work is undisputed. Yet, when it comes to assess what exactly knowledge in work, knowledge intensive tasks or occupations or even the shares of workers in an economy working as “knowledge workers” is, approaches and answers differ significantly. The proposed paper sets out to find a sensible definition of knowledge in the workplace and knowledge intensive work that can be operationalized with existing data. Once this first important step has been made, further questions are raised: Are there differences in educational backgrounds of workers in high to those in less knowledge intensive occupations? In how far does personal background matter? What other differences than knowledge intensity exist between more or less knowledge intensive occupations?

**2. Body of knowledge**

There are different conceptions of types of knowledge work (and knowledge workers) and knowledge intensity in the workplace. Hermann (2004: 10) synthesizes that “knowledge work is present, if a person has to accomplish complex or new tasks for which their present knowledge and skills are not sufficient to find an adequate solution. Thus they have to utilize other peoples’ knowledge or invent new knowledge themselves” (own translation). Volkholz and Köchling (2001) take up such considerations in operationalizing types of knowledge workers as a combination of learning and creativity requirements. Tiemann (2010) utilizes this operationalization to define knowledge intensity in the workplace and hence in occupations.

Knowledge here is seen as empowering employees to accomplish the tasks set for them in their work. It is related to the concepts of Polanyi (1966) as well as Nonaka and Takeuchi (1997), where different types of knowledge (being either codified, codifiable or ‘tacit’) can be distinguished (and also transformed into one of the other types). It is also related to autonomy at work: the more autonomy on his or her work one has, the more relevant become knowledge work requirements like learning and creativity requirements. There is a discussion about which kind of secondary education will better set students up for dealing with knowledge requirements in the workplace. Baethge and Baethge-Kinski (2006) as well as Baethge et al. (2007) propose that academic knowledge would be superior to vocational, practical knowledge. Still, economic innovation is not exclusively generated by academically trained personell. The paper seeks to overcome this contradiction by utilizing a more fitting operationalization and definition of knowledge – encompassing not only specific economic sectors like research and development but the whole economy.

### **3. Proposed methodology**

Large data-sets exist, with which occupations' knowledge-intensity can be successfully assessed. For Germany, the most prominent one is the BIBB/BAuA Employment Survey of 2012 (Hall et al. 2012). They contain data from 20,000 employed persons with at least 10 hours paid work per week (core-employment). The data will be used to assess knowledge intensity in occupations classified after the International Standard Classification of Occupations (ISCO) 2008. Other aspects like qualificalional careers, formal job requirements, tasks fulfilled and contempt with the work situation are surveyed and will be analyzed accordingly.

### **4. Discussion of expected outcomes**

Using the ISCO 08 classification, cross-country comparisons are made possible. Furthermore, the data allow addressing the following questions:

- Which occupations are knowledge intensive?
- Who is working in such occupations? Are there differences in occupational positions, salaries or working conditions other employees?
- Who comes to work in such occupations? Are there differences in qualifications, educational careers, family background (social status)?
- Are there more differences between knowledge intensive occupations and others (differences in formal qualificalional requirements, the overall matching of qualifications and competences, the tasks performed etc.)?
- How well do different institutional paths of vocational education prepare for working in knowledge intensive occupations? (In Germany, the 'dual system' of vocational education is very prominent, but other forms like full-time vocational schools are also present, as is, of course, academic education.)

Leszczensky et al. (2011) and Tiemann (2011) showed that over the last decades there has been an increase in knowledge intensive work in Germany. Yet, it is still questionable to what extent and on which level knowledge intensive work really persists in the economy. Drawing on the possibilities of ISCO 08, a comparison with other countries could be made to answer this question.

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“What Does That Mean?: Keys to Success or Failure for Beginning World Language Teachers in the Digital Age.”

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“What does that mean?” is a question posed every day to teachers of all levels and content areas. It may be the simple question of a young child pointing to an unfamiliar word; it may be a more complex question of a high school student attempting to make sense of an unfamiliar concept; or, it may be a pedagogical question from a university student preparing to become a teacher. The question becomes more serious when a soon-to-be teacher lacks a fundamental understanding of the most basic common language of education – whether pedagogical or from his/her selected content area. The question becomes disconcerting for university teacher education faculty when it stems either from a student’s perceived inattention to following instructions (such as not reading the syllabus or the directions), or from a sincere deficiency in preparatory courses. The question may well indicate a disconnect between teacher preparation programs and the digital natives who are now part of these programs. With the ever-rising stakes for P-12 teachers, the ramifications of the question beg examination.

In a relatively recent issue of *Educational Leadership*, Linda Darling-Hammond commented, “the core value of every profession is that everyone in the profession has a common body of knowledge and skills needed to be responsible and effective.”<sup>1</sup> However, in this rapidly-changing digital world, the set of common knowledge has become more difficult to establish because of the piecemeal pathways individuals take through higher education, including their teacher education preparation. If certain student teachers say their teacher education programs failed to adequately prepare them in areas vital to their performance, then this presents a problem for teacher education across the country. To establish the “core value” cited earlier by Linda Darling-Hammond, the question ‘What does that mean?’ must be answered in the minds of student teachers and cooperating teachers alike. The question must also be asked at multiple stages in the educational process, because, as in a world language

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<sup>1</sup> Scherer, Marge. “The Challenges of Supporting New Teachers.” *Educational Leadership* 69.8 (May 2012): 21.

class, words take on depth and a certain degree of flexibility as they take on nuance, or as the context changes. If one considers that each of the different paths to teacher certification represents a different context, then the meanings of the words can shift.

So, what is the core value of teaching? What is that common goal or guiding principle that all teachers share, regardless of content area? It is, in fact, multi-layered—educators share the goal of facilitating the acquisition of knowledge, but also play a vital role in guiding their students to become critical thinkers. Students must define their own paths in life, and assess the strengths and weaknesses of their own performance. In order to ultimately improve and succeed: “We want students to learn how to develop a critical stance with their work: inquiring, thinking flexibly, and learning from another person’s perspective. The critical attribute of intelligent human beings is not only having information, but also knowing how to act on it.”<sup>2</sup> When one considers applying this principle to student teachers, the core value integrates both autonomy and critical thinking, while also providing a way for the learner and the professional to co-exist. Both of these are sometimes a struggle for digital natives, given the environment of instantaneous confirmation, reinforcement, or negation in which they function on a daily basis. However, the demands of the teaching profession require educators to constantly inquire, constantly evaluate perspective, and constantly assess and re-assess, so the disconnect experienced by some student teachers might seem odd.

However, if we establish the metaphor of the core value as a common language, then from the vantage point of world language instruction, the difficulty for student teachers is clear. Learning the word does not guarantee understanding its definition. The language process typically involves several steps: a) learning a word; b) mimicking the word in a context; c) paraphrasing the definition of the word; and, d) successfully using the word in original utterances to clearly illustrate comprehension of its meaning. Student teachers must be given the chance to reflect on the direct question of meaning because the process provides vital insights into their profession and how to be successful at it. This paper will examine and explore the following key

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<sup>2</sup> Costa, Arthur L and Bena Kallick, “It Takes Some Getting Used To: Rethinking Curriculum for the 21<sup>st</sup> Century.” Heidi Hayes Jacobs, ed. Curriculum 21: Essential Education for a Changing World. ASCD: Alexandria, Va: 223.

areas related to successful teaching: a) dispositions, b) professional development, c) classroom management, d) content area, and e) pedagogy, and will provide examples and guidance for the beginning foreign language teacher, as well as the wider P-12 community. Although the discussions of issues in teacher education preparation programs focus on the core content areas, foreign language teacher education provides a meaningful jumping-off point to explore and illustrate the difficulties encountered by newly qualified teachers in all subject areas and the real possibility of their success.

In world language study and proficiency development, the learner must be brought to two key realizations: a) there is more than one way to express an idea, and 2) to create with language, one must recognize the process, as well as the parts of that language. Certain habits of mind must be defined and rooted. Habits of mind directly related to success are “a curriculum of processes that serve as leverage for learning any content. It is a curriculum that gives students practice engaging with complex problems, dilemmas, and conflicts whose resolutions are not immediately apparent.”<sup>3</sup> Included in the curriculum are elements that apply directly to communicating in a new language: “persisting, listening with understanding and empathy, thinking flexibly, striving for accuracy and precision, creating, imagining, and innovating (Jacobs 212-213).” The metaphor of the core value as a common language continues to hold because these habits dually address the question of dispositions, especially those related to meeting the needs of diverse learners in the classroom. The information presented has to be accurate, but malleable, to allow learners to approach it from different angles, or through different steps. Examples must abound; paraphrases and circumlocution present value as formative assessments. Learners cannot explain what they have not understood.

‘What does that mean?’ To be sure, just as with all teachers, this question constantly confronts the world language classroom teacher, with the added complication of deciphering what exactly the student is asking. In this case, the experience level of the teacher to whom the question is asked is relevant in its assessment. Teachers are tasked with making meaning of

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<sup>3</sup> Jacobs, Heidi Hayes, ed. *Curriculum 21: Essential Education for a Changing World*. 1<sup>st</sup> ed. Alexandria, VA: ASCD: 2010: 212.

ideas and information through exposure to both in an organized sequence, and then leading students to create meaning for themselves.<sup>4</sup> A seasoned teacher knows a) many strategies useful in explaining the nuances of the language being taught, and b) how to navigate the myriad of dynamics at play in the classroom beyond course content. Experience brings with it understanding.

For the beginning world language teacher, the question of meaning can originate from students regarding the target language; but, it can just as easily originate in the teacher himself/herself, because navigating the depths of the profession of an educator represents more of a challenge than ever imagined. The distance between the ideal profession in theory and in practice is great, akin to the chasm between formal written language found in dictionaries, and the extremely flexible, busy oral counterpart found in everyday transactions. Although nationally-normed definitions for most professional education/teacher preparation terminology exist, they are articulated in a language in which student teachers must receive a greater initiation. In order for those standards and definitions to take on relevance, student teachers' reflection needs to deepen and evolve. This is especially true in the case of digital natives. Literacy and critical thinking development in digital natives has been the subject of much analysis since the generalized presence of Web 2.0 in P-12 education. For the purposes of this current study, I present simply the idea of "beginnings" (a common formatting convention used in Web pages), and assessment of relevance based on a hyperlink or partial text.<sup>5</sup> If, indeed, students attempt to formulate an accurate impression of a whole text from a key word search, that may yield a partial reproduction of a much denser and more complex argumentation. They would benefit

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<sup>4</sup> The original framework of this idea is in relation to English-language literacy development, and is defined as the "fundamental purpose and structure of learning English: 1) making meaning of ideas and information through exposure and critical response to literature and non-fiction text; and 2) creating meaning for themselves and others." (Jacobs, ed 47-48)

<sup>5</sup> For a more in-depth analysis of 'beginnings', literacy development and relevance of words in middle school world language teaching, see Tinsley, Tonia. "The Fourth R: The Relevance of Language[s] for Digital Learners" *Transescent* May 2010. [www.mmsa-mo.org](http://www.mmsa-mo.org). Also see Ohler, Jason. "Orchestrating the Media Collage." *Educational Leadership* 66.6 (March 2009): 8-13.

from a focused examination of the definitions inherent to understanding their profession, to bridge the gap between the formal and the informal, the partial and the whole.

## Dispositions

The national NCATE standards define dispositions as the “professional attitudes, values, and beliefs demonstrated through both verbal and non-verbal behaviors as educators interact with students, families, colleagues and communities.”<sup>6</sup> Within the documents put forward by NCATE, firstly, within this definition, we come across another moment where teacher education programs can vary in the preparation provided, since “the two professional dispositions that NCATE expects institutions to assess are *fairness* and the belief that all students can learn. Based on their mission and conceptual framework, professional education units can identify, define, and operationalize additional professional dispositions.”<sup>7</sup> In the teaching profession, the sheer variety of pathways to certification dilutes the initiation process, starting at the very beginning with the cognizance of the job itself—very wrapped up in language, as it turns out. Teaching is a performance profession: it involves public speaking every day, sometimes to crowds that love you, sometimes to crowds that do not; most often to crowds that float somewhere in between. Therefore, it is a profession that requires excellence in communication and language, as well as an in-depth knowledge of the content area to be taught. When that content area is world languages, an instantly international element is thrown into the mix, but that element leads to the development of many of the primary dispositions required for successful teaching, including acceptance of diversity, non-judgmental attitude, and professional oral and written language.<sup>8</sup>

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<sup>6</sup> National Council for Accreditation of Teacher Education (2008). The NCATE Unit Standards. Washington, DC. <http://www.ncate.org/Standards/UnitStandards/Glossary/>

<sup>7</sup> National Council for Accreditation of Teacher Education (2008). The NCATE Unit Standards. Washington, DC. <http://www.ncate.org/Standards/UnitStandards/Glossary/>

<sup>8</sup> Vivien Stewart mentions the Peace Corps as one of the places where aspiring teachers can develop the “dispositions that are essential to effective teaching” (Jacobs, ed. 104). The *Peace Corps Cross-Cultural Workbook* stresses 13 beliefs, attitudes, and concepts that differ across cultures: Age, Concept of Fate and Destiny, View of Human Nature, attitudes toward Taking Risks, Concept of Suffering and Misfortune, Concept of Face, Source of

World Languages act as a filter through which one comes to understand, respect, and value differences between individuals, communities and countries, and can better equip student teachers to communicate with, and design instruction for, the diverse learners in their classes. Departments of Higher Education recognize success in world language study as one of the greatest indicators of college readiness. Business leaders and educators realize that “America’s continued role as a global leader will depend on our students’ abilities to interact with the world communities both inside and outside our borders.”<sup>9</sup>

The experienced world language teachers in a school or district might just prove to be the best hidden resource for both student teachers and beginning teachers, because of the cultural awareness and other-language immersion adaptations inextricably connected to their content area. World Language educators possess a double awareness that all learning takes place through the filter of some sort of language—“At the root of all performance is a student’s capacity in four language modalities: reading, writing, speaking, and listening [...] When individuals have acquired a level of competence in those capacities, they become functionally literate.”<sup>10</sup> Students cannot learn what they have not understood. Members of one linguistic community agree generally on the conventions of its language—the language is the common value. Novice learners in the community are initiated to it, then develop literacy in it. In order to gain experience, one must be placed in a position of having to communicate with someone who does not share the same native language, because “there is arguably no more direct route for understanding another country or understanding someone else’s perspective than working

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Self-Esteem, Concept of Equality, attitude towards Formality, Degree of Realism, attitude toward Doing, and View of the Natural World, PLUS Politeness.

<sup>9</sup> Jacobs, Heidi Hayes, ed. *Curriculum 21: Essential Education for a Changing World*. 1<sup>st</sup> ed. Alexandria, VA: ASCD: 2010: 53. The report referenced is *Education for Global Leadership: the Importance of International Studies and Foreign Language Education for U. S. Economic and National Security* (2006) endorsed by the Committee for Economic Development.

<sup>10</sup> Jacobs, Heidi Hayes, ed. *Curriculum 21: Essential Education for a Changing World*. 1<sup>st</sup> ed. Alexandria, VA: ASCD: 2010: 47.

at using their language.”<sup>11</sup> In such a situation, dependency on shared conventions or a perceived prior knowledge surface. Students learn to recognize that assumptions based only on the dominant culture hold little validity in the diverse populations in schools, just as a ‘one-size fits all’ approach to a lesson plan or classroom management cannot sufficiently meet the needs of all the learners in the room. A balance then must be struck between explanation, examples, repetition, practice, group work, individual creativity and autonomy.

### Classroom Management

The NCATE glossary does not contain an entry directly related to classroom management, even though related terms such as ‘avoidance of bias in assessment’, ‘diversity’, and, most notably “professional knowledge” each contain part of that skill set, either as values or practices. Professional knowledge is defined as the “historical, economic, sociological, philosophical, and psychological understandings of schooling and education. It also includes knowledge about learning, diversity, technology, professional ethics, legal and policy issues, pedagogy, and the roles and responsibilities of the profession of teaching.”<sup>12</sup> Student teachers consistently cite classroom management as one area in which they feel inadequately prepared. A more fruitful articulation of this aspect of teaching presents itself in the idea of classroom management as “a stated and systematic course of action based on a thoughtful analysis of existing conditions,”<sup>13</sup> while also reinforcing respect and value of differences, hierarchies and codes of conduct, and identifying/recognizing bias and bullying. World Language study again provides a useful filter, for all but the final issue of bullying. Within the very act of learning another language lays the practice of respect and value of differences, because students are led to consider in a non-judgmental way cultural gestures, products, and conventions that differ

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<sup>11</sup> Jacobs, Heidi Hayes, ed. *Curriculum 21: Essential Education for a Changing World*. 1<sup>st</sup> ed. Alexandria, VA: ASCD: 2010: 52.

<sup>12</sup> National Council for Accreditation of Teacher Education (2008). *The NCATE Unit Standards*. Washington, DC. <http://www.ncate.org/Standards/UnitStandards/Glossary/>

<sup>13</sup> Moles, Oliver C. *Student Discipline Strategies: Research and Practice*. Albany, NY: State University of New York P: 1990: 6.

greatly from their own. Teachers must consider this global view as they develop and apply their policies, so that these policies honor with the same neutrality and equality the different backgrounds and home cultures of the students in their classrooms. Reactions of students to others' opinions and practices might also be more easily understood and addressed through the filter of the Continuum of Cultural Competence that outlines the stages of that process (from destructiveness to proficiency).<sup>14</sup>

As for the hierarchies and codes of conduct, within a foreign language that contains both a formal and an informal set of subject pronouns, the nature of respect and relationships naturally becomes part of the discussion and the learning process. Every single time a student engages someone in a conversation, courtesy, respect, and hierarchy must be considered. These pronouns serve as a tangible sign of the expression of all of those qualities. This can often be difficult to identify in English, since it does not carry those same subject pronouns.

Identifying bias is part of identifying and analyzing a source. Geography in world languages provides a crucial point of reflection on this point, since maps are often examined from the perspective of a particular nation. Looking at a map from a different perspective involves a moment of recalibration on the part of the students, since often their country of reference is no longer located in its 'usual place.'

In this age of instant social media, it is crucial for teachers to model and expect their students to model respect for and value of differences among their peers. In order to present a systemic picture of how failing to instill this respect and value can lead to bullying, I have instituted three events in my Methods of Teaching Foreign Language. Firstly, the students watch a performance by the Giving Voice troupe sponsored by our Department of Theater and Dance. The genesis of the Giving Voice project is to 'meet the needs of a continuing and growing presence of oppressed or marginalized groups in higher education.'<sup>15</sup> This initial performance allows the

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<sup>14</sup> Abilock, Debbie. "Educating Students for Cross-Cultural Proficiency." *Knowledge Quest* 35: 2 (Nov-Dec 2006), 11-13.

<sup>15</sup> <http://www.missouristate.edu/assets/fctl/GivingVoiceBrochure.pdf>. Web. Last retrieved on Oct. 13, 2013.

students to see how comments and actions can be interpreted, no matter the intention. At several intervals in the performance, the performers pass into what is an 'aside' mode to explain either their behavior, or their reaction. Secondly, the students then watch the documentary 'Bully', and respond to a series of reflection questions on the reactions, strategies, and outcomes they observe. They must then propose different courses of action from those in the film. Lastly, during the semester of student teaching, the students participate in a diversity discussion with local P-12 educators and other members of the community. This discussion includes strategies on how to meet the needs of diverse learners as well as first-hand accounts of cultural or educational bias in an international setting.

### Professional Development

This term represents "opportunities for professional education faculty to develop new knowledge and skills through activities such as inservice [sic] education, conference attendance, sabbatical leave, summer leave, intra- and inter-institutional visitations, fellowships, and work in P-12 schools."<sup>16</sup> It is worth noting here that within the confines of the NCATE definition of the term, 'professional education faculty' does not include P-12 educators, who are considered clinical faculty. For these clinical faculty, professional development is often a state requirement, and for newly certified teachers, one of the tenets involves mentoring. In actuality, if student teachers are to gain a realistic picture of their profession, and if they are to grow and thrive in their career, their initiation to professional development must begin early in their teacher preparation program, with mandatory participation in content-area specific conferences and professional learning days. Just as novice learners of a world language are taught the linguistic supports of French, German, Spanish, or Chinese in stages, student teachers must be guided through their developmental steps as teachers. Arguably, aspects of clinical practice, such as observational practica, methods courses, and student teaching, address and facilitate some of this development, but these elements appear later in their

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<sup>16</sup> National Council for Accreditation of Teacher Education (2008). The NCATE Unit Standards. Washington, DC. <http://www.ncate.org/Standards/UnitStandards/Glossary/>

education and do not provide proper initiation into the context of the activity as most P-12 teachers experience it during their career.

It behooves teacher education programs to emphasize and mentor the presence and active participation of student teachers in their state content area or educational associational conferences. Also the student teachers need guidance on the process of seeking funding to attend future conferences. Learning how a district's professional development funding process works is important since budgetary constraints and an overwhelming focus on numbers, have compromised such funds in many districts.

Just as world language students and teachers seek out immersion in the culture and language of study, so too should all student teachers be immersed in professional development, but not in a sink-or-swim sort of way. The goal is to create autonomous learners, speakers, and teachers so professional education faculty must model and guide pre-service teachers in critical assessment of teaching proficiency and identification of areas where professional development is needed. Many national associations have counterparts at the state and regional levels. These would allow student teachers the much-needed initiation into the P-12 context of professional development and provide them an equally-important opportunity to create connections to regional schools and in-service teachers prior to their clinical experience. Experienced teachers have many resources that support them in their performance; before they begin their careers, student teachers need to see this in action.

The student teaching experience itself represents the most important and impactful mentoring environment, so it should be undertaken with great care. However, as mentioned earlier, the splintering of the teacher preparation process into the various certification pathways can affect the mentoring and support. University student teacher supervisors may come from different areas of service or content areas, or there may be no local cooperating teacher in a content field. This is especially true in the case of 'lateral-entry teachers', those who instantly become the teacher of record of a course, because they have been hired by a school district and given 3

years in which to complete the requirements for educator certification.<sup>17</sup> Cooperation and closer ties between the P-12 educational community, its teaching corps, and teacher education programs bring the issues related to teacher training and preparation to light. They also lead to very useful exchanges which better serve the needs of all of the students concerned. This includes the beginning teacher, who needs and deserves the instructional coaching and support as much as the student teacher, and who can be most effectively mentored through those connections with area colleagues that were formed during the teacher education program: “to best support new teachers, keep them in the profession, and improve their instructional effectiveness, schools need to make sure that the mentoring they provide is a good fit for each novice teacher’s individual backgrounds, needs, and school context.”<sup>18</sup>

In the P-12 classroom, we stress differentiated instruction and mastery in the content area, and yet, without certain concrete efforts, we deny the same necessary supports to newly qualified teachers. Oftentimes, the mentor does not teach in the same content area; smaller schools or FTE constraints mean that the new teacher is the only teacher of that subject, most notably in electives or highly-specialized advanced classes. Sponsored participation in the regional or state content-area associations’ gatherings become even more crucial.

To continue the parallel between world languages and teacher preparation, proficiency increases with meaningful interaction between the native speakers and those at the novice level: “although non-matched mentors can provide emotional support and coaching on classroom management, it’s hard for someone who has never taught history to guide a new teacher in using primary source documents, or for an English teacher to help a novice science teacher learn to address common student misconceptions around photosynthesis.”<sup>19</sup>

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<sup>17</sup> The most common routes to teacher certification are a) the traditional undergraduate teacher education program, b) post-baccalaureate certification, and c) Masters of Arts in Teaching, all of which have structures that vary, but lateral-entry teachers usually pursue completion of a certification begun in another state, or one that was interrupted with a gap of several years, and which contains deficiencies relative to full initial teacher certification.

<sup>18</sup> Grossman, Pam and Emily Davis. “Mentoring That Fits.” *Educational Leadership* 69.8 (May 2012): 54.

<sup>19</sup> Grossman, Pam and Emily Davis. “Mentoring That Fits.” *Educational Leadership* 69.8 (May 2012): 55-56.

Depending on the level of instruction and years of teaching, World Language teachers potentially have experience in both tasks. Because the content area of a modern language is interdisciplinary, these professionals delve into and grapple with historical figures and cultural issues related to exploration and colonization, or scientific discoveries and functions. They also must be skilled in designing units of enquiry that help their students to acquire ‘mainstream’ everyday vocabulary and discursive skills to match those of their counterparts in the target language, because oral and written proficiency use the benchmark of ‘educated native speakers.’ World Language educators provide a breadth of language and concepts related to the target language and culture to ensure age-appropriate register and general thematic knowledge. Therefore, many of them could serve as mentors across different areas of the curriculum, because they will undoubtedly have taught a related topic or skill in their courses.

One of the most promising (yet somewhat controversial) teaching models that can integrate sustained mentoring for student teachers is co-teaching, which places equal but different responsibilities on the team of educators. The mentoring possibilities seem endless, because the collaboration built into this type of learning environment is so strong. Within the context of a world language class, the presence of two teachers facilitates many different levels of modeling, especially in the development of speaking skills. The controversy of co-teaching appears to revolve around whether or not the student teacher in such an environment gains enough autonomy to be responsible for a course based on the traditional model where there is only one teacher for a defined class of students. Realistically, in smaller districts, the world language teacher is often ‘a department of one;’ therefore, the opportunity to co-teach would most certainly prove to be beneficial, since the exchange of ideas and information provides time for reflection and analysis of teaching effectiveness. This new mode of instructional delivery might also correspond to the participatory nature of the digital generation of “new teachers who may have a different disposition towards collaboration [...] not only to take, but also to give—ideas, resources, observations, encouragement.”<sup>20</sup>

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<sup>20</sup> Buehler, Deborah. “What New Teachers Want from Colleagues.” *Educational Leadership* 69.8 (May 2012): 48.

## Content Area

The NCATE glossary of terms defines Content as “the subject matter or discipline that teachers are being prepared to teach at the elementary, middle, and/or secondary levels. Content also refers to the professional field of study (e.g., special education, early childhood education, school psychology, reading, or school administration),”<sup>21</sup> and presents an accurate two-pronged reference to a) the subject area, and b) the professional field of study. During a recent advising appointment, one of my advisees restated it this way: “so, if I want to become a French teacher, basically I double-major in Teacher Education and French.” In many universities, looking at the degree program in his way provides a comprehensible representation of the interactions between the Professional Education faculty and the Content Area faculty. Rather than solving issues for a student with a desire to teach a foreign language, often bridging teacher education and content area faculty becomes a nightmare for the student. This is unfortunate, because many of the students who develop a passion for a content area begin learning it in the P-12 years, thanks to a teacher. Instead of being considered as separate entities, an alternative interpretation would be to consider those students as cross-disciplinary.

Despite its far-too-frequent status as an elective set of courses, world languages represent the most cross-disciplinary of all content areas. Within the scope of each course, students explore and learn history, geography, science, literature, cinema, linguistics, numerical skills and oratory skills. They learn to recognize patterns, improve their L1 (first language) proficiency, deduce meanings, and take risks. Their teachers and their textbooks show them the appropriate structures and conventions of the language use for different contexts. Students engage with authentic materials online and in print; they engage with native speakers through Skype or Wikis<sup>22</sup>. The World Language teacher guides them through all of those processes during the

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<sup>21</sup> National Council for Accreditation of Teacher Education (2008). The NCATE Unit Standards. Washington, DC. <http://www.ncate.org/Standards/UnitStandards/Glossary/>

<sup>22</sup> “Thoughtful engagement with content knowledge should include a redoubled emphasis on textbooks as well as sources of current information, like newspapers and magazines” (Schmoker 32). Textbooks have their place, because they often use a ‘dense, complex prose’ (Schmoker 35) that student teachers will confront again and again in their professional lives.

lessons, because the goal of advanced proficiency requires it, as does the passion for the content.

In teachers, the latter does not often arrive unaccompanied by the former. International immersion experiences in a target language and culture remain crucial for the successful world language teacher, although the process can be of use to improve student teacher understanding as well. When the content area focuses on written and spoken expression, the field of possible queries represented by “what does that mean?” or “how do you say X?” is really endless. For a beginning teacher, the scope of those questions can seem intimidating, because the superficial focus seems to emphasize the importance of instantly knowing the right answer. Actually, the focus should turn more towards the mapping of the thought and its message, which then allows for a more efficient determination of the parts to be used.

When university students ask, “What does that mean?”, I often counter their questions with a firm request for them to provide me with the whole sentence or thought, or I provide them with a possible partial fit, and follow up with this question of my own: “if I say to you that ‘X’ means this, but that X is a verb, how are you going to use it to express your idea?” This brings them to think about what they actually mean to say. Both for the student and the teacher, three opportunities for metacognitive growth and development occur every single time that these questions appear, since “metacognition [...] is our ability to know what we know and what we don’t know [...] It is our ability to plan a strategy for producing whatever information is needed, to be conscious of our own steps and strategies during the act of problem solving, and to reflect on and evaluate the effectiveness of our own thinking.”<sup>23</sup> In the process of working through the filter of a world language, students gain a deeper understanding of the importance of context in determining meaning and a greater appreciation of the variety of structures that languages possess to express ideas and nuance. They grasp the important role played by the

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<sup>23</sup> Costa, Arthur L and Bena Kallick, “It Takes Some Getting Used To: Rethinking Curriculum for the 21<sup>st</sup> Century” Heidi Hayes Jacobs, ed. *Curriculum 21: Essential Education for a Changing World*. ASCD: Alexandria, Va: 214.

perspective and intent of the speaker in creating the thought, and integrate that into their sentence. Because they have to think about it, they have to plan it. Once they have used words enough times repeatedly in their thought planning, they appreciate the meaning and flexibility of the words, as well as their place in the grammatical structure. The parallel of lesson planning and instruction cannot be neglected here. For a student teacher, planning is key—they simultaneously must include the language and the tasks, and must reflect on both, which brings us to pedagogy.

## Pedagogy

If pedagogical knowledge is defined as the “general concepts, theories, and research about effective teaching, regardless of content areas”<sup>24</sup> and pedagogical content knowledge is defined as the “interaction of the subject matter and effective teaching strategies to help students learn the subject matter. It requires a thorough understanding of the content to teach it in multiple ways, drawing on the cultural backgrounds and prior knowledge and experiences of students.”<sup>25</sup> In the World Language class, a third element must be added: exposure to ideas, themes, and knowledge generally available to, or learned by, an educated native speaker of the target language. To achieve this, we must turn to primary source texts and resources, and carefully structure lessons around them. Sound knowledge of that same concept in the language common to the local environment is also required, because language educators become very practiced in cognate identification and usage. Experience also permits the ready identification of vocabulary groupings and grammatical features necessary for any task. To provide two examples from a French III course, I taught units on inventors and inventions, including an illustrated schematic of how a microwave works, where the grammatical functions and requirements of impersonal expressions and the subjunctive were very useful; I also taught

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<sup>24</sup> National Council for Accreditation of Teacher Education (2008). The NCATE Unit Standards. Washington, DC. <http://www.ncate.org/Standards/UnitStandards/Glossary/>

<sup>25</sup> National Council for Accreditation of Teacher Education (2008). The NCATE Unit Standards. Washington, DC. <http://www.ncate.org/Standards/UnitStandards/Glossary/>

a unit on the prevention and causes of avalanches, which allowed the students to also study meteorological terms and safety procedures, as well as geography and topography.

Grammatically, structures used to express hypotheses were the focus.

Student teachers struggle frequently with task definition and design. One of the maxims of every level of world language instruction focuses on exactly this skill: because the teacher sets the goal to initiate students to using authentic materials from the target language and culture from day one, the charge becomes “edit the task, not the text.” The sequencing of language and literacy development plays an essential role in the ability to modify questions, role-plays, prompts, analytical questions, and synthesis to correspond to the desired competency level.

The other issue involved in strategic planning is “matching time frames to tasks.”<sup>26</sup> Once again, languages play a role in illustrating the process; in a world language course, particular attention must be paid to this technique, since students process information in a second (or third) language more slowly. Recalling the sequencing and the necessary linguistic functions required for a specific task is useful in any content area, however, because many of the learners in the class will be filtering the information through a native language which is not the one of instruction.

The most tangible indicators of progress needed or achieved are the questions students ask. Therefore, it is essential to teach them how to identify the types of questions required to fill the knowledge gaps, and to provide them opportunities to practice both formulating the questions and developing the supported answers. World Language study contains questions of all types, at every level of proficiency, and requires students to pay closer attention to the type of question asked, as well as the type of text being analyzed. Integrated Performance Assessments which gauge interpretive, interpersonal, and presentational modes of communication contain an overarching question or situation that must be addressed, and then present targeted questions within a given situational exchange (interpersonal) with an

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<sup>26</sup> Jacobs, Heidi Hayes *Curriculum 21: Essential Education for a Changing World*. 1st. Alexandria, VA: ASCD, 2010: 66.

information gap, as well as analytical questions where students must hypothesize meaning, and support their conclusions by citing elements from the text.

## Conclusion

All learning is transmitted or inhibited by language. All teachers must be expert communicators who can explain, rephrase, prompt, guide, model, and assess. World Language teachers hone these skills every day in the service of a very complex, cross-disciplinary area of expertise, one that is often undervalued, because of its elective status. These teachers must inspire, amuse, and instruct in a second language; and they do. For the student teacher, observing lessons in a World Language classroom could bring them to focus more heavily on identifying the mechanics of a given technique. The experience could also bring home to the student teacher the importance of non-verbal cues, advance organizers, and prompting questions, as well as illustrating the perspective of a student who, for whatever reason, struggles with the content. Not only would “the teaching of the English language or the dominant language in one’s own country [...] be improved by emulating the best tactics used by world language teachers,”<sup>27</sup> since those tactics help meet the needs of students who are very often at different levels of proficiency and literacy. The teaching of all content areas combined could be enriched by the experience, and, as educators, we all know what that means for student teachers and students alike.

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<sup>27</sup> Jacobs, Heidi Hayes, ed. *Curriculum 21: Essential Education for a Changing World*. 1st. Alexandria, VA: ASCD, 2010: 48.

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1. *Differentiation for the Inclusive Classroom: Integrate & Elevate*
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6. *Differentiation for the Inclusive Classroom: Integrate & Elevate*

Instead of fixing the student, fix the instruction to differentiate the planning and lessons with research-based goals, methods, materials, classroom designs, and assessments. Set up structured inclusive classrooms that honor students' academic and social skills, levels, and diversity. Connect the differentiation principles to students and staff with classroom integration that elevates the knowledge, skills, and levels for all of the inclusive partners.

Learn how to develop solid lesson plans that proactively expect, accept, and embrace the differences of students with social, emotional, behavioral, and learning differences in inclusive classrooms. Experience how to effectively map out daily, weekly, monthly, and long-range lesson plans that honor the content and performance standards. Optimize differentiated instructional approaches; provide online resources and forums for staff and colleagues with effective collaborative partnerships. Organized classrooms that value differentiated lessons have high expectations for all learners. Embrace students' strengths and potentials by fostering and facilitating disABILITY awareness and inclusive mindsets. Transform

awareness into inclusion initiatives that yield successful outcomes for students, staff, colleagues, and families. Achieve academic successes and social acceptances with positive attitudes, administrative and teacher preparation, appropriate scaffolding, content-rich differentiated lessons, appropriate strategies and interventions, technology applications, positive peer interactions, standards-based assessments, data documentation, reflections, and collaborative school and home supports. Embrace and honor not only the principles of inclusion, but most important the abilities of all learners!

This session addresses diversity within special education since students with cultural differences often incorrectly enter the special education system for multiple reasons. These include inaccurate assessments, faulty communications due to language barriers, and at times a set of differing values and beliefs between school and home cultures. This session connects to diverse student cultures and affirms how appropriate inclusive lesson designs honor student exceptionalities and cultural differences. The interactive workshop highlights how to differentiate lessons across the curriculum for learners of all abilities. This includes valuing student and staff strengths within structured and collaborative inclusive schools. Achieve high outcomes for staff and students by honoring and embracing how to translate the research into pragmatic classroom applications.

Learners will gain knowledge and skills to:

1. Apply appropriate lesson accommodations and instructional supports that align with students' strengths and levels, while honoring the rigor of the literacy and mathematics standards.
2. Connect specific standards in grade-level inclusion lesson designs to promote critical thinking skills for learners with exceptionalities
3. Explore evidence-based strategies and resources that offer challenging assignments for students in K-12 inclusive classrooms. This includes student motivation, instructional practices, and standards-based lessons and assessments that honor students' individualized education programs.
4. Apply administrative and instructional inclusion evidence-based approaches that honor the strengths and potentials of learners who are taught in inclusive classrooms
5. Explore real-life applications that prepare students to achieve successful post secondary outcomes
6. Collaborate and communicate with staff, students, colleagues, and families

This session unites the standards to research-based instructional practices that respect students' differing academic and functional levels. In comparison to typical students, students with exceptionalities have both similarities and differences (Hallahan, Kauffman & Pullen, 2012). To ensure that students master the standards, educators have to change the way that they teach (Sawchuk, 2012). Ongoing training and professional development assists educators to improve their practices (The National Mentoring Partnership's Elements of Effective Practice, 2013). Strong evidence suggests that teachers can increase student engagement and on-task behavior by differentiating the classroom environment, routines, or learning activities (Epstein, Atkins, Cullinan, Kutash, & Weaver, 2008). Standard is identified and described in terms of rigor, prerequisite skills, how and when it is taught, ways mastery will be determined, and opportunities for extension (Buffum, Mattos, & Weber, 2012). Instructional materials affect teacher effectiveness (Chingos & Whitehurst, 2012, Karten, 2012). Educational shifts need to be made (Alberti, 2012) while dangers, opportunities, and challenges are scrutinized (Brooks & Dietz, 2012; Constable, 2013) Evidence-based practices in special education are essential (Cook & Odom, 2013; Kretlow, & Blatz, 2011, Karten, 2012). Students' IEPs need to be aligned to the CCSS (Courtade, & Browder, 2011) with assignments that matter (Dougherty, 2012) and culturally responsive practices (Dray & Wisneski, 2011; Gamm, Elliott, & Halbert, 2012). This includes effective strategies for literacy and mathematics (Kist, 2013; NCTM, NCTE, NCEO, 2013, Karten, 2013).

Case Study on the Mail-Order Sales in Anime-Related Businesses

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## Abstract

The anime related market is currently in the middle of an expansion following the growing recognition of anime as one aspect of Japanese culture. In the background of this growing recognition and expanding market is the consolidation of infrastructures like the internet. With this, it is easy to approach anime from anywhere. This study focuses on anime related businesses such as using the internet for mail-order sales in order to examine the current state and issues regarding mail-order sales in anime related businesses. One form of business related to anime is the cosplay business. Cosplay refers to the impersonation of anime and manga characters, and businesses that sell the costumes and goods necessary for such impersonations are expanding following the growing recognition of Anime.

Youth Development Aligned with School Success: A Collective Impact Approach

*Education Policy and Leadership*

*Paper Session*

**Description:** This paper examines outcomes for a school community partnership in Spokane Washington that incorporates a collective impact framework. Workshops and surveys from forty-five programs supplied feedback in the first year of the project. For our findings, we see requests for: 1) more data sharing amongst other CBOs as well as SPS, 2) more access to working in schools, 3) a streamlined partnership process, and 4) knowing who is doing what for whom.

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### Abstract

As presented by Kania and Kramer in the *Stanford Social Innovation Review* (2011), collective impact works to bring all elements of community together to enhance deliberate efforts in community improvement. By creating intentional collaborations between community-based organizations (CBOs), government, private enterprise, and community members, community capacity building projects are substantially enhanced and are streamlined in being more efficient. For collective impact to work, the various sectors of community need to be: (*vision*) working toward common community-derived goals, (*data*) measuring and sharing impact results based on shared metrics, (*action*) implementing change based on data while maintaining communication, and (*sustainability*) continuing collective impact efforts for the future. The Cincinnati Strive Cradle to Career project provides a model for implementing collective action for the well being of children and youth.

The Spokane School Community Partnership project uses a collective impact model to address the Priority Spokane goal of improving on-time graduation rates by focusing on the academic success of middle school youth. The current study examines community youth-serving partnerships where the common purpose is “youth development that is aligned with school success.” During the 2012-2013 school year, three Spokane Community Partnership workshops were held to discuss potential improvements in engaging CBOs and Spokane Public Schools (SPS) in collaboration. The survey, which was designed to ascertain more detailed suggestions, emerged from these workshops. Thirty-three community organizations comprising 45 programs dedicated to serving school-aged youth and partnering with SPS responded to this survey. The survey asked these program directors/administrators about their current partnership with SPS and more specifically, what suggestions they had for partnership improvements. Based on feedback

from the survey and from workshop proceedings, we see requests for: 1) more data sharing amongst other community based organizations as well as SPS, 2) more access to working in schools, 3) a streamlined partnership process, and 4) knowing who is providing what to whom and where.

**Scaffolding innovative practice for teachers of English Language Learners with instructional cases**

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**Abstract**

This paper focuses on preparing teachers to use an innovative instructional approach for teaching English Language Learners through the integration of academic language and literacy development into science teaching. It is proposed that to learn this complex new pedagogy teachers need to engage in observation, analysis and experience with explicit models of the new instructional approaches. The paper presents lessons learned and instructional cases from the ESTELL and SSTELLA projects.

## **Introduction**

Teaching is becoming increasingly complex for both novice and experienced teachers across the United States, as the K-12 student population becomes increasingly culturally and linguistically diverse. The fastest growing student group is English Language Learners (ELL) (National Center for Education Statistics [NCES], 2006a; US Census, 2010; The National Education Association (NEA) projects that by 2025 one in four students in the U.S. will be from homes where a language other than English is spoken. Though ELLs are the fastest growing sector of the school-age population, they also have the least access to the core academic curriculum (National Center for Education Statistics [NCES], 2006a; US Census, 2010; Wong-Fillmore & Snow, 2000). For at least thirty years, the achievement of ELLs has lagged behind that of native English speakers in science and literacy (Lee & Luyck, 2006; NCES, 2006b, 2011; Rodriguez, 2004, 2010). The 2009 National Assessment of Educational Progress (NAEP) showed a 30-point difference in average science scores between students from ELLs and students who are native speakers of English. Gaps in achievement actually increase from elementary school to secondary school (NCES, 2011). ELLs are also less likely to pursue advanced degrees in science (Commission on Professionals in Science and Technology [CPST], 2007; NAS, 2010) or to perceive science subjects as relevant to their lives (Aikenhead, 2006; Buxton, 2006; Calabrese Barton, 2003; Lynch 2001; Rodriguez, 1998). Despite the severity and persistence of these gaps, few teachers receive education in how to teach science to ELLs (Ballantyne et al., 2008; Darling-Hammond, 2006; Gándara et al., 2005; NCES, 2001; Villegas & Lucas, 2002) and ELLs are the group least likely to have a qualified or experienced science teacher (Business-Higher Education Forum [BHEF], 2006; California Council on Science and Technology [CCST], 2007; Oakes et al., 2004).

This paper focuses on preparing teachers to use an innovative instructional approach to teaching ELL through the integration of academic language and literacy development into subject matter teaching. It is argued that in order to learn this complex new pedagogy teachers need to engage in observation, analysis and experience with explicit models of the instructional approaches they are being prepared to teach (Abell & Cennamo, 2004; Goldman, Pea, Barron & Derry 2007; Hewson & Hewson, 1988; Roth, Garnier, Chen, Lemmens, Schwille, & Wickler 2011; Schwartz & Hartman 2007; Sherin, 2004). The paper draws on lessons learned and presents instructional exemplars from three research and development projects: ESTELL (Effective Science Teaching for English Language Learners) and SSTEMA (Secondary Science Teaching with English Language and Literacy Acquisition).

## **Teaching Science to English Language Learners**

The education of English language learners is complex because it involves teaching academic subjects, such as science, to students while they are developing a second language (Rosebery, Warren & Conant, 1992; Stoddart, Pinal, Latzke and Canaday, 2002). The traditional approach to teaching of school subjects – such as science – to ELL typically separates the teaching of language and literacy from the teaching of subject matter because it is assumed that ELL need to be proficient in English before being introduced to more rigorous instruction in the content areas. (Buxton, 2006; Collier, 1989; Cummins, 1981; Lee & Luyck, 2006; Met, 1994; Stoddart, Pinal, Latzke, & Canaday, 2001). As a consequence most ELL are relegated to remedial instructional focusing on the acquisition of basic skills that supposedly match their English-proficiency level

(Garcia, 1988, 1993; Lee & Luyck, 2006; Moll, 1992; Valdez, 2001). This is problematic because it may take as long as seven years to acquire a level of language proficiency comparable to native speakers (Collier, 1989; Cummins, 1981). English Language Learners fall behind academically if they do not learn the content of the curriculum as they acquire English. However, the amount of time it takes to acquire grade-level English proficiency can be accelerated with the integration of content and language teaching for language minority students (Thomas & Collier, 2003). Research on second language immersion programs finds that contextualized, content-based instruction in students' second language can enhance the language proficiency of English Language Learners with no detriment to their academic learning (Cummins, 1981; Genesee, 1987; Lambert & Tucker, 1972; McKeon, 1994; Met, 1994; Swain & Lapkin, 1985). The subject matter content provides a meaningful context for the learning of language structure and functions, and the language processes provide the medium for analysis and communication of subject matter knowledge.

The relationship between science learning and language and literacy learning, therefore, is reciprocal and synergistic. Through the contextualized use of language in science inquiry students develop and practice complex language forms and functions. Through the use of language functions such as description, explanation and discussion in inquiry science, students enhance their conceptual understanding (Stoddart, Pinal, Latzke & Canaday, 2002). This is a synergistic approach to teaching and learning where language and literacy development is contextualized in scientific inquiry projects that promote understanding through collaborative work and discourse between teachers and students.

The recognition that the development of academic language is fundamental to the learning of academic subjects by all students has recently been influential in the development of new teaching standards that will be implemented nationally over the next few years. The Next Generation Science Standards (NGSS) based upon the National Research Council (2012) report: *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* identifies core science ideas and cross cutting themes that students would learn in cognitively more complex ways as they progress through their K-12 science education. NGSS views science activities (reflected in scientific and engineering practices) as language intensive practices that require specific forms of language scaffolding for English language learners (ELLs). As stated by Lee, Quinn, & Valdés (2013), “Engagement in any of the science and engineering practices involves both scientific sense-making and language use. The practices intertwine with one another in the sense-making process” (p. 2). Furthermore, “the opportunity for language development through use in context can be a language learning experience at the same time as it can be a science learning experience” (p. 6). This recognition of the role of academic language and literacy in content learning is echoed the Common Core for English language arts and literacy in social studies, science, and technical subjects (Common Core State Standards [CCSS], 2010).

## **Inadequate Teacher Preparation**

The challenge is to prepare both pre-service and experienced teachers to prepare teachers to teach ELLs by integrating rigorous science instruction with the development of English language and literacy to prepare students for advanced coursework and degree programs in STEM fields. However, most teacher education programs currently do not provide such preparation. Prior research on professional development with elementary school experienced teachers has demonstrated that experienced teachers can be trained to use an integrated pedagogy and that teachers use of this approach improves the achievement of ELLs in science, language and literacy (Bravo & Garcia, 2004; Cervetti et al, 2007; Ku, et al., 2004;, 2005; Lee et al., 2008; Stoddart, 2005).

Teacher preparation programs (both in-service and pre-service) rarely contain coursework or practicum with ELLs as part of their requirements. According to an American Association of Colleges for Teacher Education survey of 417 institutes of higher education conducted in 2000, less than one-fifth required any preparation for mainstream teachers at the elementary or secondary levels (Menken & Antunez, 2010). In the majority of teacher preparation and professional development Courses on subject matter teaching typically give little attention to the importance of valuing and incorporating the linguistic needs and cultural experiences of the students being served (Cochran-Smith, Feiman-Nemser, McIntyre & Demers, 2008; Fradd & Lee, 1995; Godley, Sweetland, Miininci & Carpenter , 2005; Lee & Luykx, 2006; Rosebery & Warren, 2008; Stoddart, Bravo, Solis & Mosqueda, 2011; Zeichner, 2003). Issues relating to cultural and linguistic diversity, when taught, are presented in separate courses that often focus on social conditions and not pedagogy (Ball & Tyson, 2011; Trent, Kea, & Oh, 2008; Zeichner, 2003). . It is not surprising that few novice or experienced teachers feel prepared to teach ELL (Ballantyne, Sanderman, & Levy, 2008; California Legislative Analyst's Office [LAO], 2007-2008); Gándara, Maxwell-Jolly, & Driscoll, 2005; NCES, 2001). In a survey of 1000 teachers in four states, Freeman, Garcia, Herrera, Murray, Valdés, & Walqui (2004) found that the number-one gap that a majority of teachers identified in their preparation programs was a lack of training in appropriate instructional and assessment strategies for working with ELL. The consequence of this inadequate teacher training is that ELL are the group least likely to have a qualified or experienced science teacher (Business-Higher Education Forum [BHEF], 2006; California Council on Science and Technology [CCST], 2007; Oakes et al., 2004). In 2010, a combined report of the National Academy of the Sciences, National Academy of Engineering, and the Institute of Medicine, identified as a top priority improving the preparation of science teachers in high need schools with large numbers of underserved minority students to increase their successful participation in STEM careers and degree programs (NAS, 2010).

## **Preparing Teachers to Integrate the Teaching of Science, Language and Literacy**

The implementation of the Common core and NGSS standards across the US makes it critically important to develop programs that prepare teachers to integrate the teaching of academic language and literacy into the teaching of core academic subjects for all learners including ELL. Over the past decade a series research and development projects have demonstrated that both pre-service and in-service teachers can be successfully trained to integrate the teaching of science, language and literacy for ELL and that the use of these

practices improve the science achievement and language development of ELL students (Baquedano-López, Solís, & Kattan, 2005; Bravo & Garcia, 2004; Cervetti, Pearson, Barber, Hiebert & Bravo, 2007; Ku, Bravo, & Garcia, 2004; Ku, Garcia, & Corkins 2005; Lee, Maerten-Rivera, Penfield, LeRoy, & Secada, 2008; Ovando & Combs, 2012; Rivet & Kracjik, 2008; Rosebery & Warren, 2008; Rosebery, Warren, & Conant, 1992; Short, Vogt & Echevarria, 2011; Solís, 2005; Stoddart et al., 2002; Tharp & Gallimore, 1988; Warren & Rosebery, 1995, 1996). The efficacy of integrated pedagogy for ELL has been documented by two groups of researchers from: 1) the USDOE funded Center for Research on Education Diversity and Excellence (CREDE) project (Doherty & Pinal, 2004; Estrada & Imhoff, 2001; Hilberg, Tharp & DeGeest, 2000; Saunders & Goldenberg, 1999; Saunders, O'Brien, Lennon & McLean, 1998) and 2) a set of NSF funded science-language-literacy integration projects (Amaral, Garrison and Klentschy, 2002; Baquedano-López, Solís, & Kattan, 2005; Bravo & Garcia, 2004; Cervetti, Pearson, Barber, Hiebert & Bravo, 2007; Ku, Bravo, & Garcia, 2004; Ku, Garcia, & Corkins 2005; Lee, Maerten-Rivera, Penfield, LeRoy, & Secada, 2008; Stoddart, 1999; 2005; Stoddart, Pinal, Latzke & Canaday, 2002; Stoddart, Abrams, Canaday, & Gasper, 2000; Yore, Holliday & Alvermann, 1994). Both approaches have identified a common set of specific and observable teacher actions that a substantial body of empirical research has demonstrated raise the achievement of culturally and linguistically diverse students and improves their motivation to learn (Stoddart, Solis, Tolbert & Bravo, in press; Tharp & Dalton, 2007). This research has identified four areas of teaching practice that promote the achievement of ELL: (1) Language Development; Teacher use of science discourse patterns and science vocabulary (LI); Literacy Integration; Teacher use of authentic science literacy tasks to support science learning. (3) Contextualization (C): teacher elicitation of student expertise from home/community (culture) or local (environmental/natural surrounding) understandings of science-related phenomena in classroom science lessons: (4) Instructional Conversation (IC): teacher initiation of conversation that requires student scientific reasoning and dialogue.

A series of research studies based on CREDE, using both qualitative and quantitative methods, have demonstrated that students in classrooms using the CFSEP practices show significant gains in reading, mathematics and science achievement and teachers use of this pedagogy has been positively linked to factors critical to student performance in school such as motivation, perceptions, attitudes and inclusion (Doherty & Pinal, 2004; Estrada & Imhoff, 2001; Hilberg, Tharp & DeGeest, 2000; Saunders & Goldenberg, 1999; Saunders, O'Brien, Lennon & McLean, 1998; Stoddart, 1999; 2005). Of particular relevance to this project are the findings of several studies conducted at one of CREDE's Research and Demonstration Schools (serving low-income Latino ELLs) document the effects of teachers' use of the approach used in ESTELL and student achievement. In all studies, teachers' use of the practices was recorded with the Standards Performance Continuum (Doherty, et al., 2002), and student achievement gains were estimated from standardized test scores (SAT-9) from two consecutive years. Teachers' overall use of the practices reliably predicted achievement gains in comprehension, language, reading, spelling, and vocabulary (Doherty, Hilberg, Pinal & Tharp, 2002). Students whose teachers used the practices extensively in their classroom organization showed significantly greater achievement gains on all SAT-9 tests than students whose teachers had not similarly transformed their teaching. (Doherty, Hilberg, and Lee (2004) replicated these findings) Doherty et al (2002) in a quasi-experimental design that used a school in an adjacent catchment area as an untreated control group, showed the same

patterns of vocabulary gains, exceeding a half a standard deviation in normal curve equivalent scores. A second set of studies by Estrada over a four-year period has consistently shown a positive relation between use of the CREDE practices and positive outcomes in 1<sup>st</sup> and 4<sup>th</sup> grades. Stronger implementation of the pedagogy produced higher student scores on tests of reading and the language of instruction. The vast majority of students in strong implementers' classrooms reached grade level in reading, whereas less than half did so in weaker implementers' classrooms (Estrada & Imhoff, 2001).

A second body of empirical evidence of the impact of integrated pedagogy on ELL student achievement is presented in the research literature on science, language and literacy instruction for ELL. The LASERS, project promoted the development of elementary student scientific understanding through the integration of contextualized science inquiry and science. ELL achievement was tracked over three years in two participating schools districts. Students (n=1,300) who were in a LASERS trained teachers' classroom for one and two years scored significantly higher on the SAT-9 in reading, language, mathematics and science than students who were not in a LASERS teachers classroom (Stoddart, 2005). The Seeds of Science of Science, Roots of Reading project involved science educators and literacy educators in creating and testing an integrated literacy-science curriculum. Reading instruction (texts, routines for reading, word level skills, vocabulary, and comprehension instruction) was integrated into inquiry-based science (Cervetti, Pearson, Barber, Hiebert & Bravo, 2007). The integrated curriculum was tested in 20 second and third grade classrooms over the course of either four or eight weeks against 24 comparison classrooms (12 where science was taught alone and 12 where literacy was taught alone). ELL made positive gains science knowledge, literacy and vocabulary development when measured against the comparison groups. The Science Instruction For All (SIFA) project analyzed the impact of an instructional intervention. The SIFA study implemented a curricular intervention in six schools and with twenty-one teachers in third and fourth grade classrooms, in which each classroom received a year of literacy and science integrated instruction. The results indicate participating students, regardless of linguistic and cultural background, experienced significant growth in their science achievement and understandings of scientific writing (Baquedano-López, Solís, & Kattan, 2005; Bravo & Garcia, 2004; Ku, Bravo, & Garcia, 2004; Ku, Garcia, & Corkins 2005; Solís, 2005). The Imperial Valley Project in Science implemented an instructional approach that allowed 4<sup>th</sup>-6<sup>th</sup> grade students to conduct first-hand science investigations and keep a science journal to reflect on science activities and develop writing proficiency. The study led to significant gains among ELLs in both science knowledge and literacy abilities as measured by SAT 9 and California Standards assessments (Amaral, Garrison and Klentschy, 2002). Finally the P-SELL project examined the impact of an integrated science language and literacy curriculum on the achievement of 1,134 third-grade students at seven treatment schools when compared to 966 third-grade students at eight comparison schools. Students who received the integrated science and language curriculum showed a statistically significant increase in science achievement than students in the comparison group (Lee, Maerten-Rivera, Penfield, LeRoy, & Secada, 2008).

### **Language Development**

The teacher modifies and scaffolds instruction to help ELL students increase both their English language fluency and content understandings. Teachers' modify their talk decreasing

speed of speech, increasing wait time, rephrasing, etc. so that ELL students can better understand teacher instructions and new content. The teacher also gives instruction on English language development, such as figurative language, idioms, grammar and mechanics (i.e. cold/colder/coldest, “raining cats and dogs,” etc.), and provides students with feedback on their English language usage when appropriate. S/he consistently scaffolds content instruction through the use of scaffolds and SDAIE strategies such as gestures, manipulatives, audio, visuals, demonstrations, word walls, graphic organizers, technology, and other instructional tools (see Hogan & Pressley, 1997; Spycher, 2009; Wong-Fillmore, & Snow, 2000).

### **Literacy integration**

The teacher both promotes content-based vocabulary learning and engages students in reading and writing activities that are authentic to the content-area, i.e. reading non-fiction readers, news articles, writing up investigation/experiment procedures and results, using notebooks, etc.). The teacher gives clear instructions on how to use these materials within class activities and provides feedback to the students on how they are using the materials (i.e. feedback on written assignments, guidance on how to use research materials on the Internet, etc.). The teacher also introduces and uses key terms and ensures students have multiple opportunities to review and use those terms during the lesson. S/he also makes sure to check for student understanding of new terms throughout the lesson (see (Cervetti, Pearson, Bravo, & Barber, 2007; Short, & Fitzsimmons, 2007)

### **Instructional Conversation**

The teacher engages students in sustained discussions about subject-area topics and assists students’ develop oral expressions of their reasoning and argumentation through the use of open-ended questions and probing students to discuss their ideas further. The teacher elaborates, revoices, and connects student ideas, and invites students to follow-up on others’ talk (see Engle, & Conant, 2002; Hanauer, 2006; Nystrand, 1997; Saunders, & Goldenberg, 1999; Tharp, 2005).

**Contextualization.** Effective science instruction *for all* students must provide learning experiences that are simultaneously *rigorous as well as relevant*. In SIELL, contextualizing science instruction advances teaching beyond physical hands-on activities or isolated inquiry investigations and extends it to include the purposeful integration of students’ funds of knowledge from home, school, or community (Buxton & Provenzo, 2011; Gonzalez & Moll, 2002; Hammond, 2001, Ladson Billings, 1995; Moll, et al., 1992). Teachers actively seek knowledge and contributions from students’ experiences outside of school. Students’ intellectual and cultural resources from homes, schools, or communities are purposefully and meaningfully integrated into the science lesson. The increased focus on engineering and technology in school science instruction can help facilitate these connections: “By solving problems through engineering in local contexts (e.g., gardening, improving air quality, or cleaning water pollution in the community), students gain knowledge of science content, view science as relevant to their lives and future, and engage in science in socially relevant and transformative ways” (p. 5, NGSS, 2013).

## **The Use of Instructional Cases in Teacher Education**

An extensive body of literature has demonstrated that the development of teacher expertise in is facilitated by engaging both novice and experienced teachers in observation, analysis and experience with explicit models of the instructional approaches they are being prepared to teach (Abell & Cennamo, 2004; Goldman, Pea, Barron & Derry 2007; Hewson & Hewson, 1988; Roth, Garnier, Chen, Lemmens, Schwille, & Wickler 2011; Schwartz & Hartman 2007; Sherin, 2004) and then providing them with opportunities to practice instructional approaches with the student population they are being prepared to teach with intensive feedback, coaching and support (Joyce & Showers, 1995; Loucks-Horsley, Hewson, Love & Styles, 1998; Speck & Knipe, 2001). The use of cases, has been shown to be effective in developing novice and experienced teachers ability to identify, analyze and use new teaching strategies through focusing their attention on specific classroom events (Abell & Cennamo 2004; Goldman et al., 2007; Roth et al., 2011; Schwartz & Hartman 2007; Sherin, 2004). The cases are used to promote productive discourse for both individual and collaborative reflection (Pointer Mace, Hatch, & Iiyoshi, 2007, Sherin 2004; Zhang, Lundeberg, Koehler, & Eberhardt, 2011), as well as help novice teachers more closely approximate the beliefs and behaviors of more experienced teachers (Ash, 2007; Segal Demarest, & Prejean, 2006; Sherin, 2004).

In this section, we provide exemplars of two types of cases – instructional scenarios and integrated teaching units that were developed in the ESTELL and SSTELLA Projects for which the senior author serves as Principal Investigator. The ESTELL project restructured three elementary science teacher education programs by engaging student teachers. The ESTELL team developed integrated science content/science methods lessons life science, Earth science, physical science, which were taught by ESTELL science methods instructors across three different university sites (<http://j.mp/RBUq5O>). Teacher candidates used ESTELL lesson plan templates to design and implement science lesson activities during their student teaching field experiences in elementary classrooms with ELLs. ESTELL treatment group pre-service teachers showed a significant increase in their use of integrated science-ELL instructional practices when compared with a control group of teachers in a control ‘business as usual’ teacher education program (Stoddart et al, in press; Stoddart, Bravo, Solís, Stevens, & Vega de Jesús, 2009). The SSTELLA project extends the work of ESTELL into Secondary Science Teacher Education and is developing instructional exemplars and video cases in secondary biology, chemistry and physics teaching (Tolbert, Stoddart, Geaney-Lyon & Solis, under review).

### **Instructional Vignettes**

The cases contained in the instructional vignettes give rich examples of integrated instruction with explanatory text. The ESTELL instructional scenarios can be viewed at [http://education.ucsc.edu/estell/pdf/ESTELL\\_Teacher\\_Handbook\\_2010.pdf](http://education.ucsc.edu/estell/pdf/ESTELL_Teacher_Handbook_2010.pdf)

### **ESTELL: Elementary Science Integrating science language and literacy**

The development of English language and literacy for ELLs involves learning to speak, comprehend, read, and write in a second language. This includes the learning of

vocabulary, syntax and lexical grammar and the use of language and literacy for both social and academic functions. Research on second language development has emphasized the importance of the contextualized use of language (Cummins, 1981; Genesee, 1987; Lambert & Tucker, 1972; McKeon, 1994; Met, 1994; Swain & Lapkin, 1985). Contextualization of language use refers to the degree to which language provides learners with meaningful cues that help them interpret the content being communicated – visual cues, concrete objects, and hands-on activities. In primary language development, children begin to understand utterances by relating them to sensory motor activities and the physical context (Krashen, 1985). In the development of a second language, this relationship needs to be explicitly communicated in instruction. By integrating language and literacy with the exploration of scientific phenomena, language activities are explicitly linked to objects, processes, hands-on experimentation and naturally occurring events in the environment i.e., they are contextualized (Baker & Saul, 1994; Casteel & Isom, 1994; Lee and Fradd, 1998; Rodriguez & Bethel, 1983; Rosebery, Warren and Conant, 1992; Stoddart, 1999). The development of science literacy is a social process, part of recognizable cultural expectations for communicating about the natural world (Roth & Lee, 2003).

ESTELL instruction around language and literacy development works to provide students with opportunities for written or verbal language expression *and* development in a contextualized science activity. Students have opportunities to collaborate with peers and the teacher, and the teacher assists students' language development by questioning, listening, rephrasing, or modeling. There is a particular focus on promoting authentic science literacy use (graphing data, recording observations, reading and writing expository texts, illustrations, etc.) using science reading materials/references/illustrations for learning science, the use of science language including science discussion, and the systematic use of scientific vocabulary. Opportunities for literacy practices germane to science provide a context for authentic uses of literacy and increase the likelihood that students will build fluency in these literacy practices. Teachers of ELLs also use the integrated science, language and literacy lessons as an opportunity for native language development and primary language support

### **Integrating science and language development – Life science – 2<sup>nd</sup> grade**

The following example describes an elaborated implementation of the ESTELL approach. All the ESTELL elements for the integration of science and language development are covered including attention to: authentic science literacy, oral science discourse, science vocabulary use, and the primary language support.

This teacher has developed a thorough understanding of how to design and implement an integrated science and language lesson. The design and implementation of the lesson uses a substantial amount of science inquiry and a range of language activities designed to engage students and advance their learning in science and language. The language and literacy activities are contextualized by being related to observations of pictures and examination of flowers. The lesson covers in-depth science and language content and the implementation provides students with an opportunity to reflect on their learning. Students are provided with tools to participate in both science inquiry and writing about that inquiry. While there was an initial focus on writing a “message” that does not correspond to scientific forms of data observation and recording, the teacher does relate authentic science literacy tasks by having students write about their pollination observations.

## Secondary Science Chemistry Lesson from the SSTEMMA Project

In the vignette below, Ms. C helps students make sense of natural phenomenon through explicit communication and reflection of a “big idea,” driven by an ill-defined question: “*How could I turn this [ice] into steam?*” The collaborative generation of a partial model (first heating/cooling diagram), followed by testing and refining the model, presses student engagement in scientific practices using complex English language functions. Rather than evaluate student responses to her questions (Cazden, 1988), Ms. C facilitates productive student talk by eliciting student conceptions and hypotheses throughout the lesson (e.g., how to turn ice into steam) and activates collaborative talk among her ELL students, increasing student access to science discourse and concepts. Individually and through small groups, Ms. C presses students to explain and discuss/critique their models as well as produce an authentic scientific text. She scaffolds students’ discourse through meta-discursive awareness (sentence frames, science notebook) and targeted feedback (Hanauer, 2006; Lemke, 2000). Students’ English language and literacy are not only developed through the authentic literacy task of writing a scientific argument, but also through the development and use of science vocabulary “claim” and “evidence” recorded in their science notebook. Ms. C contextualizes the science activity by making connections to students’ observations of steam in their homes, which she used to extend the lesson by drawing on a specific experience (using steam to clean the carpet). Finally, she closes the lesson by once again inviting students to share ways in which they could apply what they have learned, leveraging experiences for learning complex science content (Moll, et al, 1992; Rosebery & Warren, 2008). In a follow up lesson, Ms. C might scaffold and contextualize another literacy (reading) activity, using reciprocal reading (Palinscar & Brown, 1984) to read about how scientists are finding “greener” ways to harness steam energy.

### SSTEMMA secondary science lesson vignette

Ms. C is teaching a thermochemistry lesson for 10<sup>th</sup>/11<sup>th</sup> grade students including some ELL and former-ELL students. The lesson builds on physical properties of matter to create a heating/cooling curve model for water that students will later use for energy calculations.

Ms. C begins by using a document camera to display the phrase, “Uses of steam in the home” and a photo of steam coming up from a teapot. She asks for student suggestions, and they offer “cooking vegetables” and “ironing.” One student says, “My mom once used steam to clean a stain on the carpet.” Ms. C records these suggestions, then shows students a container

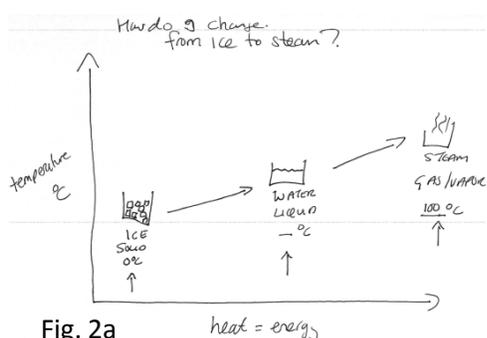


Fig. 2a

of ice cubes: “Let’s say I need some steam to clean my carpet, but all I have is this ice. *How could I turn this into steam?*” Students offer: “heat it” and “put it in a pot of boiling water.” Ms. C probes further: “How long would it take?” and “what factors might I need to consider?” She makes sure that Juan, an emerging bilingual, participates: “Juan, what could you add on?” and encourages students to build on each other using a sentence frame ([Name of peer], I agree/disagree that [restate peer’s comment]; therefore,...). Olivia states:

“Juan, I agree that steam is ‘hot.’ Therefore, it should have more energy.” The shared perspectives lead students to generate, collectively, a hypothesized visual model (Fig. 2a) of the phase changes of water when energy is applied.

Ms. C refines the problem: “We really want to know the *relationship* between energy and temperature in these phase changes. Is the relationship linear?” She writes the question with the doc-u-cam and invites another ELL student to write the question in Spanish - ¿Cuál es la relación entre la energía y la temperatura, es la relación lineal? Students record both versions in their science notebook. The lesson continues with students working with water, ice, a heating device, and thermometer in heterogeneous groups (by EL proficiency and class grade) to test the model. Some students observe their ice at a temperature lower than 0°C. While walking around the class, Ms. C encourages students in one group to think about what this means for the visual model they have created. The students recognize the need to relocate the position of the first beaker in the diagram. Additional observations lead students to notice that their thermometer stays at zero degrees while the ice melts.

At the end of the activity, Ms. C displays a sentence frame: “I claim that the diagram should really look like ... because ...” reminding students that scientists explain science by making claims that they support with evidence. She refers students to the class-generated science word wall and the “student-friendly” definitions of *claims* and *evidence* previously recorded in their science notebooks.

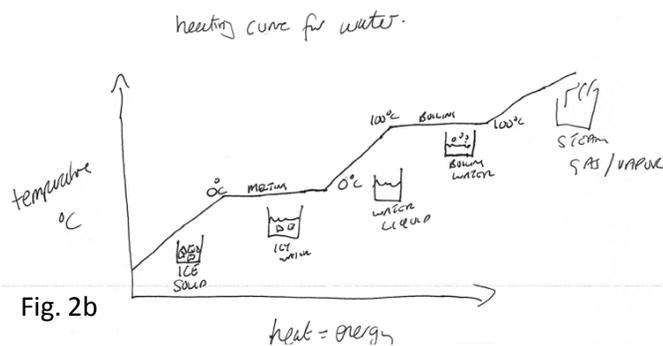


Fig. 2b

Moving around the classroom, she asks students to share what they have written and provides feedback on their writing. Finally, in a mini-poster session, Ms. C uses a cooperative structure, e.g. Numbered Heads Together, to ensure equitable participation as student groups share their explanations to the whole class, which leads to a discussion about how to amend the initial heating/cooling curve diagram. Ms. C draws the revised model to match the model the students have developed (Fig. 2b) and then returns to the question of the energy and temperature relationship during phase changes inviting students to share experiences outside the classroom where they can apply their model.

### Integrated Instructional Units

The integrated instructional units are designed to train teachers to develop science units that build on both the state Science Teaching Standards and the state English Language Development standards to scaffold both student science understanding and language and literacy development. The teachers, both experienced and pre-service teachers, have a personal learning experience through the integrated unit. Sciences methods instructors and professional developers teach the unit to the student explicitly modeling the strategies. The instructor and teachers engage in analysis and discussion of the units and the learning experiences during the process. After the learning experience, teachers use the model to develop their own integrated lesson plans. An elaborated version of this unit and six

additional integrated elementary science instructional units can be found at [http://education.ucsc.edu/estell/pdf/estell\\_sci\\_methods\\_course\\_materials.pdf](http://education.ucsc.edu/estell/pdf/estell_sci_methods_course_materials.pdf).

### **ESTELL Integrated Lesson Plan: Moon Phases and Seasons (3<sup>rd</sup> grade)**

This series of activities provide students opportunities to experience and understand the nature of science and levels of inquiry through the context of Sun-Earth-Moon (SEM) systems. Students are introduced to day and night through a whole class reading of a non-fiction reader. A kinesthetic modeling of day and night allows students to experience the spinning Earth and the day/night cycle. Selected manipulatives, models, visuals, video clips and teacher demonstrations will be provided to support students' conceptual understanding. The guided inquiries are designed using the 5E Learning Cycle Model to provide a student-centered and planned sequence of instruction (Engagement, Exploration, Explanation, Extension/Elaboration, and Evaluation).

**Day 1** - Access students' prior knowledge about the Sun-Earth-Moon systems

Activity 1: Concept Mapping: Why do you think we have day and night?

What do you want to know more about day and night?

Activity 2: KWL: Phases of the Moon

Activity 3: S-E-M Model

Activity 3A: Moon Phase Demo (whole class) - Optional

**Day 2** – Causes of Seasons (Guided Inquiry)

Activity 4: Sun-Earth Survey (Pre-Assessment)

Activity 5: What Causes the Earth's Seasons? OR

Activity 5A: How Angle Spreads a Flashlight Beam

**Big Ideas/Unifying Themes:** Models & Scale and Systems & Interactions

The objects in our solar system move in regular and predictable patterns that can be observed, recorded, and analyzed. The position of the Earth during its rotation causes the cycle of day and

night. The observed phase of the moon is determined by its position relative to the Earth and Sun. Earth's seasons are caused by the tilt of its axis.

**Process Skills:** Observing, Making Inferences, Hypothesizing, Communicating, Constructing Models, Theory Development

**Intended Learning Outcomes:** At the end of these lessons, students will be able to:

1. (Day 1) Describe & demonstrate the Earth's rotation on its axis in a cyclical fashion.
2. Demonstrate & illustrate why there are phases of the moon, using given manipulatives & models.
3. Read and retell at least one story about how people from different cultures have various beliefs about the Sun, Earth and Moon.
4. (Day 2) Assess personal models about what causes the Earth's seasons after viewing *The Private Universe* video clip, reading informational texts, and in-class demonstrations.
5. Formulate effective scientific questions and use evidence from data (i.e, observations and measurements) to refine their explanations.

**Vocabulary: English Spanish English Spanish**

Astronomy Astronomia Revolution Revolucion  
Moon Luna Earth Tierra  
Waning Moon Luna Menguante Solar Eclipse Eclipse Solar  
Waxing Moon Luna Creciente Spin Giro  
Northern Hemisphere Hemisferio Norte Equator Ecuador  
Rotation Rotacion Lunar Eclipse Eclipse Lunar  
Sun Sol Model Modelo  
Seasons Estaciones Tilt Inclinacion  
Axis Eje Moon Phases Faces de la Luna  
Southern Hemisphere Hemisferio Sur Sunrise El amanecer  
Day Dia Night Noche

**CA Frameworks/Standards: Earth Sciences, Grade 3**

Objects in the sky move in regular and predictable patterns. As a basis for understanding this concept: a) *Students know* the patterns of stars stay the same, although they appear to move across the sky nightly, and different stars can be seen in different seasons; b) *Students know* the way in which the Moon's appearance changes during the four-week lunar cycle; d) *Students know* that Earth is one of several planets that orbit the Sun and that the Moon orbits Earth; e) *Students know* the position of the Sun in the sky changes during the course of the day and from season to season.

**CA English Language Development Standards Grade 3 Intermediate ELD level focus:***Listening and Speaking*

Strategies and Applications: Listen attentively to stories and information and identify important details and concepts• Participate in social conversations with peers and adults on familiar topics by asking and answering questions and soliciting information.

**Conclusion**

The research and instructional practices discussed above demonstrates that the integration of ESTELL pedagogy into science teaching is a powerful model for improving ELL achievement. The challenge is to prepare novice teachers to effectively use this instructional approach in their classrooms. Most teachers, however, are not prepared to teach academic content to diverse learners (Bryan and Atwater, 2002; Lee & Luykx, 2004; Rodriguez & Kitchen, 2005). The majority of teacher education programs do not model an integrated approach to instruction and in the course work there is little connection between learning to teach science and the use of use of culturally responsive pedagogy. Subject matter teaching methods are taught with little emphasis on integrating the language and culture of the student population being served (Dalton, 1998; Fradd & Lee, 1995; Stoddart, 1993a). Issues relating to cultural and linguistic diversity, when taught, are presented separate courses and often focus on social conditions not pedagogy (Met, 1994; Zeichner, 2003). If novice teachers are to learn to effectively teach science to diverse learners there must be coherence between their own learning experiences of science content, the pedagogy taught and modeled in science teacher education methods courses and they need to engage with explicit models of practice.

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*PlatinuMath: A Videogame to Change Preservice Teachers' Mathematical Skills and Attitude Toward Mathematics and Games*

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**Abstract**

Preservice teachers lack mathematics skills and positive attitudes toward mathematics. We cannot change students' mathematics scores or solve the STEM pipeline problem until we address these challenges. We developed a videogame and training materials to address these challenges and have tested them with 100 preservice teachers. Preliminary results indicate teachers need additional mathematics training, and that *PlatinuMath* can help. Attitudes toward mathematics and games are more positive than the literature leads us to believe.

## Introduction

Preparing teachers to teach mathematics effectively is one of the most urgent educational problems facing us today. Research shows that students learn more from teachers with strong academic skills than they do from teachers with weak academic skills (Ballou, 1996); similarly, when the teacher does not have the skill in the subject matter being taught, student achievement is negatively impacted (Darling-Hammond, 2000). The U.S. Department of Education through its Race to the Top initiative has made raising teacher quality, improving teacher training programs, and the development of better evaluation ratings including examination of formative assessment a national priority (Walsh and Jacobs, 2009).

Many U.S. elementary teachers lack sound mathematical understanding, though there is great variance in teachers' grasp of mathematics required to teach this subject. Studies comparing the mathematical knowledge of teachers in China and the U.S., for example, show dramatic differences between the two groups. Elementary teacher weaknesses in the procedural and conceptual understanding of fundamental mathematics results in inability to present material clearly and to provide error free content—as a result classroom instruction suffers and student achievement is affected (Ball et al., 2005; Wu, 2009; Hill, 2010; Morris et al., 2009). On the other hand, mathematically stronger teachers have the ability to go beyond problem solving to interpreting and responding to student mathematical thinking (Hill, 2010; Jacobs et al., 2010; Wilson et al., 2011).

The content deficiencies appear not only in in-service teachers, but also in preservice teachers. Studies of preservice elementary teachers show alarming deficiencies in their procedural knowledge of the subject matter at the levels they are teaching. For example, one study (Silver, 1986) found that many preservice teachers thought that  $\frac{1}{4} + \frac{1}{6} = \frac{2}{10}$ , adding numerators and denominators separately. This and other procedural errors are linked to faulty representations, such as counting the two shaded and the ten total parts in rectangle drawings of the two fractions, as well as other conceptual difficulties (Ball, 1990; Hiebert & Lefevre, 1986; Ma, 1999; Newton, 2008; Rittle-Johnson et al., 2001; Silver, 1986).

Conceptual understanding, which is necessary for teachers to explain mathematics well to students, is also low, and research shows that teachers' conceptual knowledge affects elementary students' mathematical success (Hill et al., 2005). "It is a fact of human nature that teachers who are uncomfortable with the mathematics they teach are not the ones to push hard for excellence in the mathematical performance of their students" (Wu, 1999).

Preservice teachers also need to develop an understanding of student mathematical thinking, a complex skill critical to effective teaching. Prospective teachers need to be able to recognize the patterns and processes a student uses to solve mathematical problems, regardless of whether the student arrives at the correct or incorrect solution (Jacobs et al. 2010; Morris et al., 2009).

The specialized knowledge required to teach mathematics will require teacher training programs to provide preservice students an opportunity to develop these

competencies over time (Morris et al., 2009). Scalable tools that can objectively and reliably measure student progress and competence in the math skills required for teaching are desperately needed because teacher self-reporting and current assessments are inadequate measures (Hill, 2010; NCTQ, 2008; Walsh and Jacobs, 2009). A recent study of first-year teachers in New York City showed specialized mathematics knowledge to be a better predictor of student mathematics outcomes than a series of other indicators, including general cognitive ability (Rockoff et al., 2008).

The U.S. Department of Labor projects 15-16% growth in the number of K-5 classroom teachers needed between 2008 and 2018—a growing demand that will result in the hiring of 271,200 additional elementary teachers. These new teachers, along with the 1,729,000 already employed as of 2008, will have a tremendous impact on the quality of education for millions of elementary school children.

We hypothesize that our formative assessment tool in the form of an online game, PlatinuMath, will measure the preservice teacher's mathematical understanding for teaching, will provide learning while playing, is conducive to repeated practice over time, can differentiate instruction, and therefore can improve the competency of prospective teachers. As preservice teachers become more competent with the mathematical knowledge for teaching (MKT) (Ball et al., 2008; Hill, 2010; Morris et al., 2009) their attitudes and beliefs about teaching math will also improve. As a result of improved content competence and changed attitudes, teachers will do a better job with instruction, students will learn more, and student performance on standardized assessments will improve.

### **Inadequate Teacher Preparation**

Reviews show that colleges erroneously assume that future teachers enter with sufficient conceptual understanding of elementary school mathematics, and therefore do not teach that content (Conference Board of the Mathematical Sciences, 2001). Elementary teachers are entering training with poor previous experiences and performance and become practicing teachers who have not learned the content they are required to teach (Adler et al., 2005). In addition, U.S. elementary teacher preparation programs do not compare favorably with the international elementary teacher preparation programs (U.S. National Committee on Mathematics Instruction, 2009). Findings suggest that generally the mathematics preparation of elementary school teachers falls short of recommended guidelines with regard to the number, sequence, and type of college courses taken (Dossey et al., 2008).

A comprehensive study on elementary mathematics commissioned by the National Council on Teacher Quality (NCTQ, 2008) found poor mathematics preparation of elementary teachers to be the rule rather than the exception, with only 13% of the 77 schools in the sample passing the overall evaluation quality of preparation criteria set forth by the commission. This lack of preparation was the number one determining factor in the poor performance of U.S. elementary students on national and international assessments. Because math understanding relies on cumulative knowledge, solid elementary grade mathematics teaching is critical.

When a solid foundation is not acquired in the early years, remedial work is the norm thereafter.

### **Assessment of Preservice Teachers Needed**

National organizations and centers including, but not limited to the U.S. National Committee on Mathematics Instruction, the National Council on Teacher Quality (NCTQ), the National Council of Teachers of Mathematics (NCTM), the U.S. Department of Education, and prominent researchers in the area of education reform are calling for scalable and effective assessment of preservice teacher competencies (NCTQ, 2008; Race To The Top, 2009; Hill, 2010; Rennert-Ariev, 2005; Dossey et al., 2008). Currently the only large-scale assessment for prospective elementary teachers in most states is the Praxis II (ETS, 2010), which contains mathematics items; however the results are not public. The NCTQ specifically noted that the Praxis test, the most widely required exit/licensure test, failed to measure the proficiencies required for good teaching of math in the classroom. The council developed a sample test as a starting point for a new generation of tests to measure the preparation of teachers entering the classroom (NCTQ, 2008). We will consider the recommendations and items developed for the NCTQ sample test when designing items for our formative assessment game.

### **The Intervention**

Our formative assessment game, PlatinuMath, provides a unique solution to these problems. In order to address shortcomings in teacher preparation programs college instructors must have accurate assessments of their students' mathematical understanding. Likewise preservice teachers need to have an accurate assessment of their own mathematical understanding before they can be prepared to improve their content knowledge. PlatinuMath can provide that assessment data. However, we know that the majority of preservice teachers have negative beliefs and attitudes about their ability to do math and so they are reluctant to be tested in the subject. With PlatinuMath, students will become engaged by the narrative and game play and will be less focused on the intervention as a didactic instrument. PlatinuMath is deliberately designed to measure *and* improve content understanding simultaneously, which will help alleviate the preservice teachers' math anxiety and low math confidence—factors which become reflected in classroom teaching strategies and passed on to students. Our commercialization plan in section 8 of this proposal fully describes TDM's strategy to bring PlatinuMath to market.

PlatinuMath is a narrative-based video game of the action-adventure genre. The formative assessment is organized into three games, each covering eight basic mathematics ideas. Mini-games within the game narrative address 24 NCTM standards. PlatinuMath is designed to address the mathematics knowledge for teaching that preservice elementary teachers need to master. Ma refers to this as 'a profound understanding of fundamental mathematics' an understanding which includes (1) Connectedness-seeing how math concepts relate to one another; (2) Multiple perspectives-the ability to approach mathematics in a variety of ways; (3) Basic ideas-the foundation of elementary mathematics that recur throughout math

learning; and (4) Longitudinal coherence-the acknowledgement that what is taught today is the base for future knowledge (Ma, 1999).

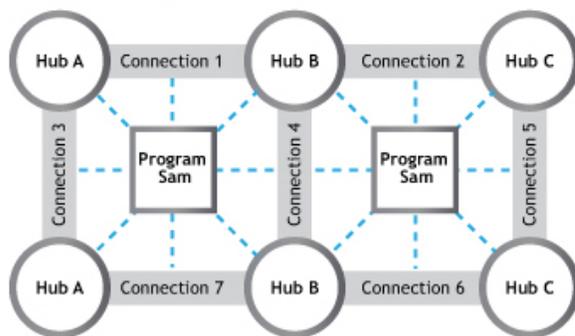
PlatinuMath is designed to seamlessly incorporate the content knowledge and pedagogical content knowledge components into a unified experience of assessment and skill building. Mini-games will be developed for procedural content knowledge, conceptual concept knowledge, and simulated student logic. Below are a précis of the storyline and a graphic representation of how the game world will be organized.

### **PlatinuMath Game Narrative: New York, 1893**

The day before her college graduation, young Regina Cavendish receives a note from her brilliant and reclusive uncle, Dr. Paddington. Following the note's instructions, Regina travels to her uncle's estate, only to find the house has been ransacked and her uncle, kidnapped. Among the wreckage, Regina finds a message written with blood; "Surrender the Platinum weapon and your uncle will live."

Regina races to the secret lab beneath the house, where she discovers Sam, a mechanical man built from bolts, gears, and platinum. The astonishing humanoid reveals that Dr. Paddington was hired by a secret society to construct an unstoppable weapon made of Platinum. The doctor built Sam, a robot with free-will. When Paddington refused to surrender his creation, he was taken hostage and Regina was summoned to do what her uncle would not. Now, Regina must join with Sam to rescue Dr. Paddington while protecting the identity of her uncle's most powerful, and dangerous invention. However, to achieve her goal, Regina must solve a series of mathematical problems that will give her clues for rescuing Dr. Paddington.

### **PLATINUMATH GAME WORLD**



#### **PlatinuMath Game World Mathematics Legend**

Connections: Procedural--Skill Building

Hubs: Conceptual--Multiple Perspectives

Program Sam: Simulated Student Logic

## **Mini-games**

The 24 content knowledge targets are delineated into implicit conceptual understandings and more explicit procedural skills. The game world of PlatinuMath (above) is a network of locations; each point on the plane is a multi-leveled mini-game with content carefully scaffolded into the leveling structure. Mini-games are designed with 6 difficulty levels. Mini-games that develop the requisite procedural skills and content knowledge precede mini-games that build the central implicit mathematical understandings. Conceptually based mini-games act as "hubs," with skill based games connecting one mathematically implicit hub to another. The construct facilitates a deeper understanding of basic mathematics by allowing the player to experience the connections between simple and complex ideas, while demonstrating the multi-faceted nature of problem solving and the variety of approaches to finding a solution.

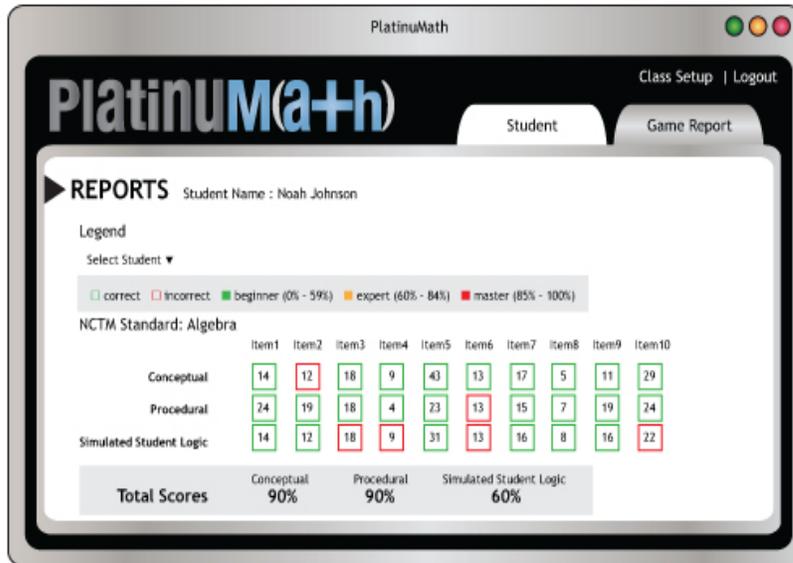
Procedural skill mini-games are fast moving models where a problem appears on the screen and the player clicks on the correct answer. Such formats are a necessary part of any mathematics curriculum as they allow the learner the repetition requisite for procedural fluency. The design of PlatinuMath incorporates problem-solving or conceptual mini-games unlike anything currently on the market. These more in-depth mini-games are designed to model specific conceptual ideas or logical intersections of the more procedural games. In conceptual mini-games, the player can interact in a variety of ways to solve the problem and will often be challenged to use more than a single strategy.

PlatinuMath gaming requires the preservice teacher to exhibit competence in decoding and understanding children's mathematical thinking and error analysis. Common errors reveal that something may have been overlooked in instruction, and these perceptions get repeatedly transferred from one concept to another until the gap in student understanding has grown quite large. Although actual teaching experience is often the best way to become familiar with the common pitfalls, PlatinuMath introduces the preservice teacher to most of the commonly seen issues.

Simulated student logic is introduced through the mechanical character, Sam, who accompanies the protagonist throughout the narrative. Sam has the ability to hack into the minds of his mechanical counterparts in order to find solutions to the math questions thrown at him. The player is able to see the questions Sam encounters and Sam's answers to them. Sam is logical, knows his basic facts, but like a student is imperfect and will perform mathematical procedures incorrectly. The player needs to be able to analyze Sam's responses and figure out where Sam's calculation has gone wrong. The errors will seldom be careless errors; more often Sam will have to be "taught" something which happens by the player reprogramming Sam through a user friendly interface. To program Sam, the player has to become familiar with writing general rules using variables that allow the player to consistently gain experience connecting the practical to the abstract.

## **PlatinuMath Database and Dashboard**

The easy-to-use dashboard (see Figure 1) is a reporting tool that will provide logging and tracking that is rarely if ever found in formative assessment products. The dashboard will allow sorting of performance data by student, mini-game, item analysis, and mastery level. The student and/or faculty member can customize the game to meet the student and program learning needs. These features differentiate PlatinuMath from all other assessment products on the market, including Praxis and other multiple choice tests. Aggregate data will be collected which could be used to inform instruction and program curriculum decisions.



**Figure 1. PlatinuMath Dashboard.**

### **Product Implementation and Intended Outcomes**

Preservice teachers use PlatinuMath as an ongoing supplement to their teacher training program of coursework, math methods and mathematics course requirements, as well as practical classroom experiences. Because it is web-based, they will be able to access it at any time from any place. Because it is self-paced and personalized, the product implementation is scalable and cost effective; it may be used by as few as one student or by an entire program. Although the initial assessment portion can be completed in several hours, the tool is designed to be used throughout the training program for improved mathematical understanding and content review, with or without the game narrative. An easily accessed backend database collects the student's performance and time on task for each content area over time and by instance. The data collected reflect holistic math knowledge for teaching scores as well as individual scores of procedural and conceptual competence by content domain. PlatinuMath is computer adapted to adjust the difficulty level of questions according to the success of the player. Since it is a formative rather than summative assessment, PlatinuMath data should inform university instruction with regard to the success of both individual student and programmatic competencies and result in adjustments to teaching, if required.

## Theoretical and Empirical Support for PlatinuMath

Our theoretical assumptions are based on studies of teacher qualities that influence student success. In the following section, we describe assumptions and their sources; explain how particular steps within the project flow from the assumptions; and indicate how the theory of change informs evaluation of each step's success. Since dimensions of change in preservice teachers' mathematical knowledge for teaching depend on one another, we strongly believe in addressing all of them holistically, and paying close attention to dependencies and connections.

### Theory of Change

The theory of change as defined by Connell et al. (1995) has been integrated prominently into the theoretical framework of PlatinuMath. Our theoretical assumptions are based on studies of teacher qualities that influence student success. In the next section, we describe assumptions and their sources; explain how particular steps within the project follow from the assumptions; and indicate how the theory of change informs evaluation of each step's success.

Studies show deficiencies in elementary teachers' math procedural knowledge (Ma, 1999). This weakness comes from and exacerbates poor conceptual understanding of fundamental mathematics (Ball et al., 2005), lack of understanding for the mathematical thinking of children (Jacobs et al., 2010), and lack of mathematical sophistication in attitudes and beliefs about mathematics (Seaman & Szydlik, 2007). These components of content knowledge—together with teaching and learning knowledge, attitudes and beliefs included in pedagogy, and pedagogical content knowledge (Shulman, 1986)—comprise what Ball et al. (2008) call mathematical knowledge for teaching (MKT). In addition, we believe that mathematical pedagogy needs to be situated within modern computational and social media technologies, supported by 21st century skills and attitudes.

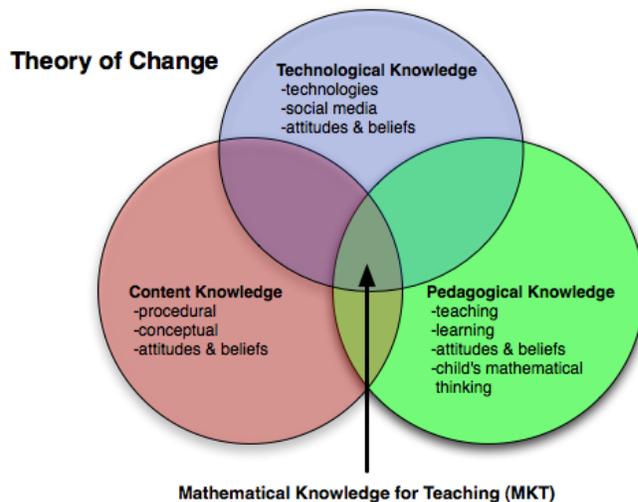
### Empirical Support: Knowledge Framework

For this project, we are building a conceptual framework that incorporates multiple research perspectives. Having diagrammed the major framework parts, we will now explain the ways in which our study builds on past works.

*Specialized Content Knowledge* is the knowledge of mathematics unique to and essential to good teaching (Ball, Thames, and Phelps, 2008). Procedural knowledge and

conceptual understanding described below are parts of specialized content knowledge.

*Procedural Knowledge* is defined as the ability to use math notation and to apply step-by-step algorithms to solve exercises (Hiebert & Lefevre, 1986). As noted in our problem statement, both pre-service and in-service teachers lack procedural knowledge of mathematics at the level they are



teaching (Silver, 1986; Ball, 1990; Hiebert & Lefevre, 1986; Ma, 1999; Newton, 2008).

*Conceptual Understanding* is defined as ‘knowledge that is rich in relationships. It can be thought of as a connected web of knowledge, a network in which the linking relationships are as prominent as the discrete pieces of information. Relationships pervade the individual facts and propositions so that all pieces of information are linked to some network’ (Hiebert and Lefevre, 1986). Ma (1999) found that the vast majority (80-90%) of U.S. teachers are unable to provide meaningful, correct mathematical explanations because they lack conceptual understanding.

*Noticing of Children’s Mathematical Thinking* is paying attention to children’s logic, interpreting their understandings, and effectively responding based on that information (Jacobs et al., 2010).

### **Beliefs and Attitudes**

Within the study’s framework, we focus on three components of the belief and attitude structure: content, pedagogical knowledge, and technological knowledge. The content component includes both cognitive and affective elements; the affective part deals with intrinsic motivation ( Ryan & Deci, 2000) and math anxiety (Tobias, 1993). Preservice elementary teachers have the highest math anxiety levels of all college students; studies have shown that interventions addressing the affective domain alone lead to improved math success (Hembree, 1990). Our game and the online community are specifically intended to increase intrinsic motivation for mathematics and to reduce math anxiety.

Pedagogical knowledge, the second component, includes teaching and learning parts. Our project is intended to effect belief and attitude changes connected to know-how about particular elementary mathematical topics. The result will be changes affecting preservice teacher preparation, thus leading to better student achievement once the teacher enters the classroom.

### **Professional Communities and Networks**

Today’s college students are fully integrated into the social networks of facebook and Twitter. For the online community part of this project, we adapt the principles put together by Herrington & Oliver (2000) on the basis of multiple studies, including: authentic contexts true to real-life mathematical teaching; authentic activities allowing higher order thinking; access to expert performances and modeling; collaborative construction of knowledge; opportunities for reflection and articulation; and authentic assessment of learning. We will collect data about these processes using the learning theory of connectivism (Siemens, 2005) Table One, below, summarizes how our research and development framework addresses the dimensions within our game and the online community supporting the game.

**Table One. Framework and Game Alignment**

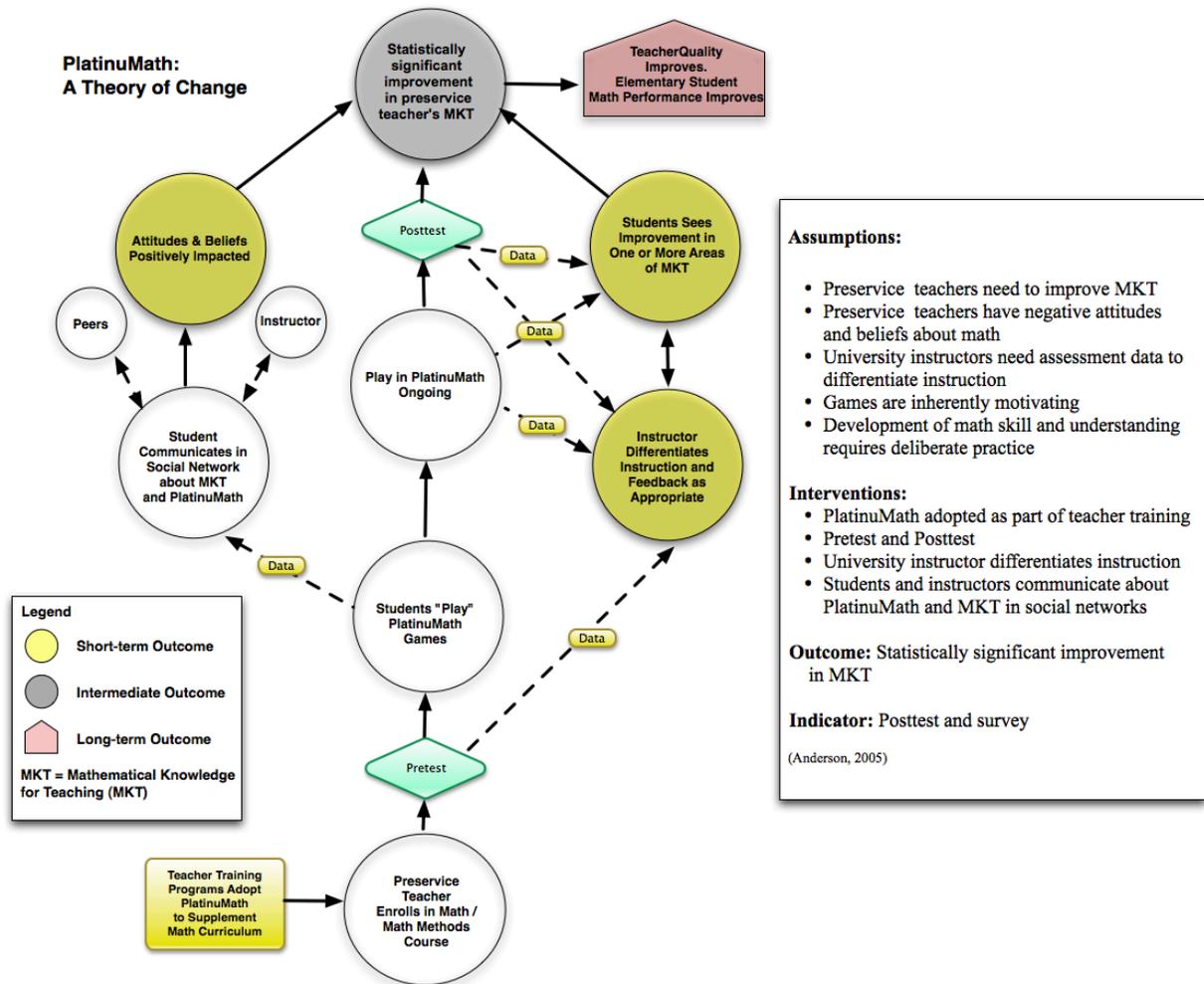
<b>Aspects of Professional Development</b>	<b>Game Features Addressing These Aspects</b>	<b>Online Community Features Addressing These Aspects</b>
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<b>Procedural knowledge of mathematics for teaching</b>		
<ul style="list-style-type: none"> <li>• Procedural fluency</li> <li>• Applications to everyday life &amp; other academic areas</li> </ul>	<ul style="list-style-type: none"> <li>• Fluency through situated practice</li> <li>• Applied tasks</li> <li>• Formative assessment of skills &amp; procedures</li> </ul>	<ul style="list-style-type: none"> <li>• Discussions of procedures &amp; algorithms relevant to the game</li> <li>• Lesson planning around procedures &amp; applications</li> </ul>
<b>Conceptual understanding of mathematics for teaching</b>		
<ul style="list-style-type: none"> <li>• Topic/skill connections</li> <li>• Problem-solving</li> <li>• Applied meaning</li> <li>• Conceptual underpinnings of procedures</li> </ul>	<ul style="list-style-type: none"> <li>• Game metaphors supporting conceptual generalizations</li> <li>• Algebraic &amp; geometric reasoning</li> <li>• Problem-solving tasks calling for connections among multiple areas</li> <li>• Formative assessment of conceptual understanding</li> </ul>	<ul style="list-style-type: none"> <li>• Discussions of conceptually challenging topics from the game</li> <li>• Lesson planning for profound understanding of fundamental mathematics</li> <li>• Collaborative summaries &amp; visualizations of topic connections</li> </ul>
<b>Beliefs &amp; attitudes</b>		
<ul style="list-style-type: none"> <li>• Mathematical sophistication</li> <li>• Motivation &amp; anxiety</li> <li>• Technology attitudes</li> </ul>	<ul style="list-style-type: none"> <li>• Generalization, patterning &amp; modeling tasks</li> <li>• Tasks calling for making &amp; testing conjectures</li> <li>• Anxiety reduction &amp; increased motivation</li> </ul>	<ul style="list-style-type: none"> <li>• Explicating mathematical attitudes &amp; beliefs in discussions of game tasks</li> <li>• Intrinsic motivation through community participation &amp; support</li> </ul>
<b>Pedagogical knowledge and Noticing of Children's Mathematical Thinking</b>		
<ul style="list-style-type: none"> <li>• Knowledge of learners</li> <li>• Knowledge of teaching</li> <li>• Adapting to curriculum changes</li> </ul>	<ul style="list-style-type: none"> <li>• Professional development through gaming</li> <li>• Tasks based on teaching skills</li> <li>• Tasks for evaluating, reflection, &amp; decision-making</li> <li>• Curriculum bridge tools</li> </ul>	<ul style="list-style-type: none"> <li>• Formulating &amp; discussing lesson planning principles &amp; pedagogical dilemmas</li> <li>• Discussions of the accompanying student game (*)</li> <li>• Collaborative curriculum bridge tools</li> </ul>
<b>Technological knowledge</b>		
<ul style="list-style-type: none"> <li>• Computer literacy</li> <li>• Math 2.0 (social media &amp; networking)</li> <li>• Visual &amp; multimedia literacy</li> <li>• Serious gaming</li> </ul>	<ul style="list-style-type: none"> <li>• Initial accessibility of the game for technology novices</li> <li>• Computer skills development</li> <li>• Modeling technology teaching practices in game tasks</li> <li>• Active multimedia use</li> </ul>	<ul style="list-style-type: none"> <li>• Math-specific social media know-how</li> <li>• Collaborative notation &amp; diagramming tools</li> <li>• Lesson planning for technology use</li> </ul>
<b>Professional communities &amp; networks</b>		
<ul style="list-style-type: none"> <li>• PLNs (personal learning networks)</li> <li>• Social objects for communities</li> <li>• Community events</li> </ul>	<ul style="list-style-type: none"> <li>• Game is designed as a source of community social objects</li> <li>• Integrating the game into everyday professional activities &amp; existing teacher networks</li> </ul>	<ul style="list-style-type: none"> <li>• Attracting innovative teachers &amp; teacher training leaders</li> <li>• Powerful support for pre-service &amp; new teachers</li> <li>• Ability to form peer-support groups</li> </ul>

### **PlatinuMath: Pathway to Change**

We have discussed the theoretical and empirical frameworks that serve as the basis for the design of PlatinuMath. The Figure 2, below, is a visual representation of the causal relationship between actions and outcomes associated with the intervention (Anderson, 2005). This map should be read from bottom to top, because the earliest preconditions and outcomes at the bottom are needed to get to the next level. We predict that if teacher training programs implement the PlatinuMath intervention as a supplement to math/math methods courses preservice teachers' will see increased procedural and conceptual mathematic

understanding, this growth will lead to positive changes in attitudes and beliefs about math and with continued interaction with PlatinuMath over time a statistically significant improvement in preservice teachers' MKT will result.



**Figure 2. Conceptual Framework for PlatinuMath**

### Rationale for Game as Formative Assessment

Today, serious digital games are used by the U.S. Army, FEMA, the FAA, the Office of Homeland Security, multinational corporations, universities, and non-profits to teach and test everything from economics and cultural sensitivity to counterterrorism and jet piloting. In this study, the purpose of the game is formative assessment, specifically, the measurement of mathematical knowledge for teaching (MKT). Serious games with learning purposes are now being developed for all areas of the curriculum (Gibson et al., 2007). NCTM itself promotes gaming as a means of teaching mathematics on its Web site. Recent cutting edge research explores the use of serious games as a vehicle for embedded formative assessment (Shute, et al., in press).

Computer assessment games allow what paper and pencil tests do not: saving multiple states and returning to the previous ones; automatically replicating objects and actions as the program adapts to student decisions; bolstering the strengths and identifying the weaknesses of the student; and keeping the assessment history over time.

A game design environment was chosen for PlatinuMath for the following reasons:

- *Prevalence.* If anything characterizes today's generation of students—whom Marc Prensky (2001) calls “digital natives”—it is that they are gamers, and today's preservice teachers have grown up playing games, the female students as well as the males. According to *Gamer Segmentation 2009*, female gamers make up 40% of all players of video and computer games (<http://www.csmonitor.com>).
- *Motivation and Immersion.* Games have the potential to induce and sustain flow, which
- Csikszentmihalyi (1990) defined as total immersion in a task or activity.
- *Encouragement, Formative Feedback, and Rewards.* Effective adaptive formative feedback provides the student with two types of information as it tracks the student's progress: verification and elaboration. Verification simply confirms whether the answer is correct or incorrect; elaboration can provide the student with relevant cues. Both are important for effective feedback within the game structure and PlatinuMath can exploit the potential of multimedia to further improve the value of the feedback (Shute, 2008).
- *Adjustment of cognitive load.* Serious game computer-based assessment systems know how a student is progressing and where they are having problems, and they can use that information to make real-time adjustments by altering the difficulty level of tasks (Shute et al., in press). The combination of feedback and adaptive task sequencing while concurrently assessing knowledge and skills can result in a powerful assessment tool (Shute and Hansen, 2007).
- *Rich Interactive Environment.* Paper and pencil standardized tests restrict the presentation of content to static text and images. PlatinuMath will appeal to multiple learning styles because it is multimedia, multi-sensory, and multifaceted. Also, because games are graphical and auditory rather than textual, math concepts can be presented in a variety of ways that require the student to interact with and manipulate the content as opposed to react to it.
- *Recurring Practice.* Preservice teachers develop the mathematical understanding for teaching over time. Because gaming holds their attention in the way traditional instruction often does not, students frequently practice games on their own time (Garris et al., 2002). PlatinuMath can be programmed so that students are presented with new numbers and varied game-play assessment each time they play and increase time on task, which improves students' understanding.
- *Improved Performance.* Evidence indicates that formative assessment gaming can be highly effective for improving student performance by helping students to facilitate and direct their own learning (Shute et al., in press). Examples include web-based formative assessment, PsyCAL, which is used to teach university psychology; TRIADS software used to devise a formative assessment for students

in engineering; web-based formative assessment for medical students; and GAM-WATA, a web-based formative assessment quiz game for 5<sup>th</sup> graders (Wang, 2008). Although the assessments cited above are different from the formative assessment game we are proposing, the basic elements are similar.

### Evaluation Plan and Model

#### Strategies.

Preservice teachers (PST) and teacher-educators (TE) math competency, attitudes toward teaching math, attitude toward PlatinuMath (PM), and attitude toward games as teaching tools were assessed using qualitative and quantitative methodologies. Attitudes and math competency were collected as pretests prior to implementation of PM, and again as posttests after using PM. PSTs completed surveys, and some were selected for focus group interviews based on a range of demographic characteristics to ensure representativeness. TEs completed attitude toward the intervention/games surveys pre and post PM, provided a written analysis of the product, and were interviewed afterwards.

Table 1. Evaluation Questions, Data Collection, and Analysis.

Goal	Research Questions/Short-Term Outcomes	Measurement & Instruments	Data Analysis
Improve mathematics competency for preservice elementary/early childhood teachers	Preservice teachers will demonstrate better mathematics ability after playing the game	NC Mathematics Scales (Please list the NC tests sections/titles/subjects here)	ANOVA of control and intervention groups; Analysis of change scores
Improve preservice elementary/early childhood teachers' attitude toward math	Preservice teachers will demonstrate better attitude toward mathematics after playing the game (confidence, anxiety, etc.)	The Kalder and Lesik Adapted Fennema Sherman Math Scale for pre-service teachers.	ANOVA of control and intervention groups; Analysis of change scores
Improve preservice elementary/early childhood teachers' attitude toward games in the classroom	Preservice teachers will demonstrate better attitude toward games in the classroom after playing the game	Interview (individual or focus group), observation. Games Survey (based on Millstone, J. (May 2, 2012). <i>National survey and video case studies: Teacher attitudes about digital games in the classroom.</i>	Thematic Analysis of Qualitative Data; ANOVA
Improve teacher educators attitude toward PlatinuMath as an instructional tool	Teacher educators attitude toward PM as an instructional tool will be neutral or more positive than before evaluating the materials	Interview (individual or focus group), observation.	Thematic Analysis ANOVA Descriptives
Improve teacher educators attitude toward games as instructional tools	Teacher-educators will demonstrate neutral or positive attitude toward games in the classroom after evaluating the materials	Interview (individual or focus group), observation. Survey--based on Millstone, J. (May 2, 2012). <i>National survey and video case studies: Teacher attitudes about digital games in the classroom.</i>	Thematic Analysis ANOVA Descriptives

## Method

### *Research Design and Participants.*

We used a pretest-posttest control group design:

$R0_1 \quad X \quad 0_2$

$R0_1 \quad 0_2$

Two hundred pre-service elementary education majors at an Upper Midwest university were invited to participate out of a pool of 400 total preservice teachers. These students included elementary education majors and those with double majors in elementary education and either early childhood or middle school. Data collection took place in the latter half of the Spring semester, 2013. Students were recruited in classes, by email (through the college student distribution list), and via flyers in the building. Four educators were recruited to conduct an analysis of the games and lessons for possible use in courses. These educators include the chair of the Teaching and Learning department at and expert in elementary math education, an Associate Professor in the Mathematics department. The other two educators were drawn from the Resident Teacher master's program which comprises in-service teachers seeking advanced degrees. These teachers attend classes full-time in this intensive education program, and are thus highly motivated and have significant professional and academic experience and knowledge. This program is also highly selective, so they are in the upper percentiles for academic and professional knowledge.

Reviewers were offered \$250 incentives for participation in the evaluation of the games and lessons in the form of a written report and participation in an interview. PSTs were paid \$10 for completion of all games and surveys, and those who completed all phases of the study (comparison group or intervention group) were entered into a drawing to win one of five iPad Minis. The pretest, intervention, and posttest took between 10 and 15 hours. Participants were asked to play one hour per day for 10 out of 15 days and/or until all lessons and games have been completed). We also conducted an exit survey for all intervention participants to ask how they used the games, how long they played, when they played, what they thought, etc. A variety of demographic data were collected, including gaming experience whether they had taken methods courses yet, what their major was (early childhood plus elementary education; elementary education; elementary education plus middle), what their academic experience was (when they declared major, how many courses taken, whether they have switched majors, credits toward degree, current class schedule, etc.) and number of math classes taken.

### *Instruments*

*Math Test.* Items were drawn from the North Carolina End-of-Year test for mathematics across grades 3–8, based on the mathematics coverage of the PlatinuMath game. A mathematics education expert was consulted on paring down the number of items to just those covered and practical for the time allotted. These test items are validated and reliable, having been used in North Carolina after extensive design and

testing, until 2009. There were 64 questions on this test, and it takes approximately 40 minutes to complete.

*Game Attitude Survey.* This survey was developed based on Fullan & Stiegelbauer's (1991) first order and second order barriers to change. Existing game attitude and use surveys or articles that reported findings based on scales were identified and the questions, constructs, and/or outcomes were categorized and first or second order barriers, and then items from those scales were either used, if available, or developed based on reported outcomes. Scales used for this included Beggs, (2000); Bingimlas (2009); Bunch and Broughton (2002); Brown, Davis, Onarheim, and Quitadamo (2002); Butler and Sellbom (2002); Christiansen (2002); Graham, Culatta, Pratt, and West (2004); Kennedy-Clark (2011); Kenny, and McDaniel (2011); Maddux and Johnson, (2010); O'Hanlon (2009); Mueller, Wood, Willoughby, Ross, and Specht (2008); Ray, and Coulter, G. A. (20??); Russell, O'Dwyer, Bebell, and Tao (2007); Schoepp (2005); Teo, Chai, Hung, and Lee, (2008). Equal numbers of items per construct were generated, and items were worded in the negative and positive to prevent skewing of the data due to spurious responses. Several iterations were examined for face validity, and principal components analysis will be conducted once sufficient data are available. There are 83 items on this test which use a 5-point Likert-type scale, and the instrument takes approximately 10 minutes to complete.

*Math Beliefs.* This was tested using the Kalder and Lesik Preservice Teacher Math Scale, which was based on the Fennema Sherman Math Scale. The Fennema Sherman scale has been shown to have three factors (Wikoff and Buchalter, 1986), the first anchored by confidence on one end and anxiety on the other, with 24 items loading on this factor between .53 and .84, with 18 above .70 and a reliability of .97. The other two factors are positive attitude toward math (loading between .56 and .74, with reliability of .89) and negative attitude toward math (with loadings between .43 and .80 and a reliability of .90). These sub-scales were used as described above, in addition to additional scales proposed by Kalder and Lesik, including Math Enjoyment, Math Motivation, and Attitude Toward Mathematics Teacher. There were 72 total items on this 5-item Likert-type scale, and the instrument takes approximately 15 minutes to complete.

## **Results**

### ***Phase I: April, 2013***

A total of 90 participants completed at least one phase of the research, for a response rate of 45%. However, only 58 of these completed all phases of the protocol (pretest-posttest for comparison group; pretest-intervention-posttest for the experimental group), for a final response rate of 29%. The sample were predominantly white (95.6%, n=86) females (92.2%, n=83) between the ages of 20 and 22 (68%, n=72) with a range of 18 and 43 years of age. There were 6 males, 2 African Americans, and 1 Native American.

While participants were randomly assigned to comparison or experimental groups, there was a disproportionate rate of mortality in the experimental group. Of the 45 comparison group participants, 60% (n=27) and 69% of the experimental group participants completed the pretest and posttest. However, the majority of those in the experimental group did NOT meet the protocol requirements for participation, which

were to play the game 10 hours per week, on average, during a two-week period, and to attempt to complete all parts of the game. Of the 45 experimental group participants, 8 never played, 5 played the game one time, 3 played the game twice, 6 played it 3 times, and 2 played it four times. Overall, 61% played the game four times or less, and 14% played it 7 times or more. This results in unequal groups when controlling for having met the protocol (played approximately 7 times) and violates the assumptions for most of the analyses needed.

There are several other limitations of this first phase of the study. The students were recruited to play toward the end of the term, which is a stressful time for them. It was not possible to test sooner because the game was still under development. Additionally, at least 50 of the participants were in their final coursework and preparing to go into the schools for their field work. These students are under particularly high stress, as this experience is directly tied to their success in their careers and job search, and they have many lesson plans to develop for the first time. As it was, at the time of testing (which was as late as we could possibly go), one whole chapter of the game was missing from the game and there were some bugs in the game that prevented completion of some of the games. All of these factors combined to reduce our *n*, and to increase our attrition and non-compliance rates. While participants were loathe to give up their chance at winning an iPad Mini, many could not make the time to spend on the game that they had anticipated and promised.

Finally, the overall sample size is too small to detect the anticipated effect size. Our power analysis indicated the need for 88 participants per condition to detect a medium effect size, and even without attrition and non-compliance we only have 45. Therefore, the analyses presented in this report are preliminary and descriptive, and no definitive assertions of causality or correlation are made. Further analyses will be run this fall, as described later.

Pearson Product Moment bivariate correlations were run on days of gameplay and posttest scores. As expected, mathematics posttest scores were positively correlated with positive attitude toward mathematics on six of the subscales, including mathematics value (.39,  $p = .001$ ), enjoyment (.45,  $p < .001$ ), motivation (.45,  $p < .001$ ) negative attitude toward mathematics (-.39,  $p = .001$ ), positive attitude toward mathematics (.41,  $p = .001$ ), and combined anxiety and confidence scales (.42,  $p < .011$ ) as suggested by Wikoff and Buchalter (1986). Additionally, day of gameplay was positively correlated with posttest scores (.23,  $p < .05$ ).

Univariate ANOVAs to compare group differences did not reveal any statistically significant differences between the groups because of sample size (and reduced power therefrom) and low protocol compliance rates among experimental group participants. Comparison of group means were conducted for possible trends however.

When comparing all experimental to all comparison groups on posttest measures, the experimental group showed higher scores on seven measures (lower anxiety, higher math value, better perception of mathematics teachers, attitude toward games as instructional tools, lower overall negative views of mathematics, higher positive views of mathematics, and overall mathematics confidence). They were lower on mathematics posttest scores, and the same on confidence, enjoyment, and motivation. None of these

differences were statistically significant. Table 3 presents means by group on these measures.

*Table 3. Mean Posttest Scores by Group.*

Measure	Condition	Mean	Std. Error
Math Posttest	Control	47.18	2.01
	Exp	45.00	2.25
Posttest Math Confidence Scale Score	Control	54.40	2.70
	Exp	54.96	2.81
Posttest Math Anxiety Scale Score	Control	58.51	2.90
	Exp	59.12	2.97
Posttest Math Value Scale Score	Control	75.81	2.16
	Exp	77.61	2.14
Posttest Math Enjoyment	Control	55.03	2.68
	Exp	55.83	2.52
Posttest Math Beliefs Motivation Scale	Control	52.14	2.55
	Exp	52.93	2.37
Posttest Math Teacher	Control	62.11	1.73
	Exp	65.03	1.90
Overall Game Attitude Score (no constructs)	Control	287.33	4.79
	Exp	288.61	7.26
Overall Negative Attitude Toward Mathematics	Control	46.81	1.51
	Exp	47.25	1.53
Overall Positive Attitude Toward Mathematics	Control	81.18	3.09
	Exp	83.32	3.11
Overall Confidence	Control	99.66	4.85
	Exp	101.06	5.00

Because so few of the experimental group complied fully with the protocol, it was possible that any effect of the intervention would be “diluted” by these participants who, for all intents and purposes, experienced little different than those in the comparison group. Therefore, the same analyses were run with only those members of the intervention group who played at least 4 days (approximately have the hours required by the protocol. Table 4 presents these means.

This resulted in only 13 participants in the experimental group vs. 27 in the comparison group. This difference in group sizes violates the assumptions of ANOVA which, although robust to such violations, is highly unreliable with differences are two-to-one, as they are here. ANOVAs were NOT run, and these results must be interpreted with caution. What becomes apparent is that treatment group members who played more were different from those who played less. Experimental group members had better attitudes toward mathematics and were better at mathematics than comparison group members on 10 out of 11 measures. They were the same as their counterparts overall negative attitude toward mathematics. No causality can be inferred here because we have selected a subset of perhaps more motivated learners within the experimental group and compared it to all members of the comparison group, but the trends are all in the predicted direction.

Table 4. Mean Posttest Scores by Group With Those Who Played More than Four Days.

Measure	Condition	Mean	Std. Error
Math Posttest	Control	47.18	2.01
	Exp	55.30	2.33
Posttest Math Confidence Scale Score	Control	54.40	2.70
	Exp	57.45	4.43
Posttest Math Anxiety Scale Score	Control	58.51	2.90
	Exp	61.90	4.08
Posttest Math Value Scale Score	Control	75.81	2.16
	Exp	77.09	3.70
Posttest Math Enjoyment	Control	55.03	2.68
	Exp	58.00	3.71
Posttest Math Beliefs Motivation Scale	Control	52.14	2.55
	Exp	54.72	3.65
Posttest Math Teacher	Control	62.11	1.73
	Exp	63.63	3.35
Overall Game Attitude Score (no constructs)	Control	287.33	4.79
	Exp	290.80	14.07
Overall Negative Attitude Toward Mathematics	Control	46.81	1.51
	Exp	46.63	2.62
Overall Positive Attitude Toward Mathematics	Control	81.18	3.09
	Exp	85.81	4.76
Overall Confidence	Control	99.66	4.85
	Exp	105.81	7.26

Because these trends appear to be significant in some cases, and despite the violation of assumptions for univariate analyses are not met, between and within subject ANOVAs were run for the sake of further exploration. Again, no results should be interpreted beyond potential trends and differences for future analysis.

A one-way between groups ANOVA indicates that there could be a statistically significant difference between those who played the game more than four times ( $m = 55.3$ ) and those in the comparison group ( $m = 47.1$ ) on mathematics posttest scores ( $F_{1,35} = 5.539, p = .024$ ). Although random assignment should result in equal distribution of participants with varying posttest scores on mathematics and attitude, selection of a subset of the intervention group introduces potential variance that cannot be controlled for in the comparison group. Therefore, further within-subject analyses were run for intervention and comparison groups to determine how participants may have changed on these measures over time. While a linear mixed model GLM repeated measures would be the ideal procedure for our purposes, the violations of assumptions and the complexity of the analysis are not warranted at this stage, and individual repeated measures for each group have as much explanatory value for our purposes. The same cautions apply to the interpretation of these results as with previously reported results.

Within-subject ANOVA was conducted on all measures, and this procedure should be assumed to apply to all results reported here unless otherwise noted. Comparison group participants became MORE negative about mathematics overall from the pretest ( $m = 30.26, SD = 9.05$ ) to the posttest ( $m = 46.81, SD = 7.86$ ) assessments;  $t(26) = -5.31, p < .001$ , and approached significant differences on mathematics scores ( $p = .052$ ). Likewise,

experimental group participants also were more negative about mathematics overall from pretest ( $m = 28.9$ ,  $SD = 1.17$ ) to the posttest ( $m = 47.26$ ,  $SD = 8.55$ ) assessments;  $t(30) = -7.10$ ,  $p < .001$ . Participants in the experimental group were also lower on mathematics confidence ( $m = 57.32$  and  $54.97$ ,  $SD = 13.35$  and  $15.70$ ),  $t(30) = 2.18$ ,  $p = .037$ ; on mathematics enjoyment ( $m = 58.74$  and  $55.84$ ,  $SD = 11.86$  and  $14.03$ ),  $t(30) = 2.18$ ,  $p < .001$ ; and mathematics scores ( $m = 50.19$  and  $45.00$ ,  $SD = 6.86$  and  $12.58$ ),  $t(30) = 2.18$ ,  $p = .037$ .

Lower scores for comparison group members might be explained by participants not being able to correctly assess their own mathematics skills prior to taking a mathematics course. There are only two required mathematics courses for teacher candidates, and taking the measures toward the end of class (when final tests begin to reveal possible gaps in their knowledge and thus create lower confidence) could explain this. But this does not explain differences for the intervention groups. However, because so few of the intervention group actually fully complied with the protocol, their experiences were relatively similar to those of the comparison group. Therefore, the analyses were run again with a subset of intervention group members who played the game at least 5 times. Data were also further examined for outliers and one case was removed for the posttest analysis and one case for the game attitude scale.

Paired-sample t-tests for the subset of the intervention group (those played more than 4 times) revealed that posttest scores were unchanged over time, lending support to the idea that gameplay may have remediated what would otherwise have been reduction on posttest mathematics score experienced by all others in the study ( $m = 55.40$  and  $55.30$ ,  $SD = 4.08$  and  $4.55$ ),  $t(9) = .114$ ,  $p = .912$ . Similar analyses for those who played 4 times or less indicated a significant drop in posttest scores ( $m = 47.75$  and  $40.40$ ,  $SD = 6.73$  and  $12.48$ ),  $t(20) = 3.33$ ,  $p = .004$ . The ratio of standard deviations is 2-1, indicating unequal variance in the pre- and posttest scores, but no outliers were found and these analyses are only for the purposes of discussion.

Comparison group participants also were lower from pre- to posttest on measures of motivation ( $m = 58.73$  and  $54.73$ ,  $SD = 9.33$  and  $12.13$ ),  $t(10) = 2.29$ ,  $p < .05$ , and higher on overall negative attitude toward mathematics ( $m = 28.55$  and  $46.64$ ,  $SD = 6.17$  and  $8.72$ ),  $t(10) = -4.36$ ,  $p = .001$ . Intervention group members were similarly lower on motivation ( $m = 58.73$  and  $54.73$ ,  $SD = 9.33$  and  $12.13$ ),  $t(10) = 2.29$ ,  $p < .05$  and higher on overall negative attitude toward mathematics ( $m = 28.55$  and  $46.64$ ,  $SD = 6.17$  and  $8.72$ ),  $t(10) = -4.36$ ,  $p = .001$ , when controlling for those who played more. Again, such results cannot be fully interpreted and future analyses will be able to detect any differences more reliably.

### ***Conclusion***

While no results can be interpreted with confidence, the trends are for the most part in the anticipated direction, providing preliminary support for the efficacy of the game. Those who played the game more appear to have done better overall by the end of the study. And despite the problems and glitches with the game and the stress of being at the end of the semester, game players still felt overall that games were an effective instruction tool for mathematics. Phase II of the study will help to answer the research questions more

definitively, as we will analyze those data separately and, where warranted, in combination with phase I participants.

## **Phase II: Fall, 2013**

### **Participants**

We are working with two, intact mathematics education courses; one with 50 students and another with approximately 20. Because we recruited from across all courses in the Spring, some of these students will be ineligible for participation this time, so the final number is expected to be between 35 and 50. Because PM is designed to be integrated into preservice teacher education courses, this phase will have more ecological validity (all participants will be using it as intended as part of a class for grade, rather than for payment).

### **Method**

All instrumentation will remain the same, except that PM is now a complete product with the addition of a teacher portal for scaffolding how to play PM and integrate it for teaching purposes. The game is also fully functional, with bugs and suggested features and modifications from phase I now implemented.

Participants will be required to generate a lesson plan around the use of either PM or another set of technology resources as specified by the teacher. They will be required to interact with the product fully (e.g., for PM, play all the games to the end) and then choose one of them to write a lesson plan around. This is expected to take 10 hours for the game/resource, and 10 hours for the lesson plan. They will get class credit for their lesson plan.

This is expected to result in higher participation and protocol compliance, and to emphasize the pedagogical nature of the product as a learning and teaching tool. Participants will be screened for prior participation, and those who have already participated will be assigned to the comparison group but will NOT be included in final analyses. Those who have not participated will be randomly assigned to comparison and experimental treatments.

They will first complete pretests as described earlier, then the treatment or comparison group activity, and then complete posttest. This will happen during October and the first part of November.

We will analyze results and write them up for a final report in December, and use them also to present at an international conference, to which we have submitted a proposal and expect to be accepted shortly.

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**Hawaii International Conference on Education, January 5-8, 2014**

**Proceedings Submission**

**Title of the Submission:** Indigenous Knowledge System: Osage-Pawnee-Lakota Oral Tradition and Intercultural Education

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**Presentation Format:** Workshop Session

**Abstract:**

This workshop will be an interactive intercultural immersion session based on my work as an Osage (American Indian) spiritual practitioner of fifteen years. My intent is to introduce a methodology of Indigenous Education that will provide participants with an indoor creative space so they can experience an Indigenous Knowledge System of oral tradition through story, song, and collective interaction. My approach is based on a natural world ritual called a “willow walking stick creative methodology.” The objective of the workshop is to engage the participants in a group activity that forms a praxis for spiritualizing pedagogy. My Indigenous Education work is grounded in the appreciation of the natural world by utilizing collective voice, dialogue, and creativity. This process elevates our collective sensorial perception toward gaining respect for and dialogue between differing cultures relative to a positive Intercultural Education group exercise. The participants will experience an Indigenous language of oral traditional story, song, and practice that will help mirror the storytelling genre of the “willow walking stick creative methodology.” Overall, the workshop will provide the audience with an opportunity to appreciate the flow of respectful dialogue, creativity and well-being that is supportive of Indigenous Knowledge System within an Intercultural Education learning environment.

*Keywords:* indigenous education, indigenous knowledge system, intercultural education



Victoria Graves

Submission ID 1174

# TZI-ZHO

## Abstract

Title: Teasing and Bullying Prevention for the Young Child

Abstract: The purpose of this workshop is to help educators gain an understanding of why some kids tease and bully and how an adult might intervene. Participants will learn specific strategies how to teach children to create social groups that aren't defined by excluding others. We will look at and discuss the social lives of children and help teachers and parents who are trying to understand how to prevent exclusion and how to support children.

**“The more kids are aware of what bullying is the better. Simple teasing can really take a toll on a kid. We just want kids to know bullying when they see it, so they can at least try and stop it. - Carl Sousa**

Bullying happens when: a student is exposed, repeatedly and over time, to negative actions on the part of one or more students. (D. Olweus, 1993). Many students are identified as *at-risk* with social/emotional, behavioral and learning issues who are struggling with success. Several of these students are being recommended to special education, but are falling short of eligibility requirements, thus lacking the support they need to succeed. “With appropriate early services, referral to special education may be prevented for children showing early indicators of behavioral maladjustment”. (Baker, J.A., Kamphaus, R.W., Horne, A.M., & Winsor, A.P., 2006). Researchers have found evidence that prevention services must include helping children develop the prosocial competencies needed to mediate the school environment, in addition to remediation of academic and/or behavioral deficits. (Baker, J.A., Kamphaus, R.W., Horne, A.M., & Winsor, A.P., 2006).

There are many types of bullying behaviors, which have been seen in children as young as preschoolers. The most successful way to end bullying behaviors is through preventative education. Markers of Bullying include: Imbalance in power or strength, intent to harm., threat of further aggression (B. Coloroso, 2003). Some types of bullying are: Teasing with the intent to hurt/harm, Name calling, Threats, and Saying things to hurt feelings. (Bailey, T.L., 2002).

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## Websites

Take a Stand. Lend a Hand. Stop Bullying Now [www.stopbullyingnow.hrsa.gov](http://www.stopbullyingnow.hrsa.gov)  
Make Time to Listen. Take Time to Talk about Bullying.

1. Title of the submission

The Effects of Learning Activities on Acquiring Expertise and Generic Skills in Undergraduate Seminars

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## 6. Abstract

Seminars are one of the learning styles in university classes in Japan, and they play significant roles for students' learning. First, various activities in seminars are effective for students in generating motivation and acquiring satisfaction. Writing theses, reading books and articles, making presentations, asking questions, discussing, conducting fieldwork or a survey, and planning some sort of events or workshops are typical of seminars. Second, seminars promote a variety of abilities which include collecting information, analyzing information, solving problems, and communicating with others. Some researchers have reported that seminars develop cognitive skills, critical thinking, and generic social and cooperative skills. Finally, teachers are able to provide more individual, careful and polite instructions for students in seminars. In other words, seminars represent a community which is comprised of a teacher and students.

As previously mentioned, most teachers and researchers have focused on positive effects of seminars. However, little research discusses the relationship between methods of seminars and learning outcomes such as generic skills through seminars based on empirical studies. Additionally, assessments by students have not yet become a subject of research about seminars. Therefore, it should be significant that researchers conduct an empirical survey for teachers and students who study in seminars.

The purpose of this study is to investigate motivations for learning, senses of communities, acquiring expertise, growth in generic skills, and satisfaction in undergraduate seminars for second, third, and fourth year students, and then to consider the relationships among these factors. In this study, we conducted a survey using two questionnaire forms. One is for teachers who run seminars on the basis of five features to understand lesson structures of seminars: understanding learners' characteristics, setting educational goals, setting learning goals, performing learning activities, and teachers' instruction. The other is for students who attend seminars on the basis of five features: motivations for learning, senses of communities, acquiring expertise, growth in generic skills, and satisfaction.

We surveyed 600 seminars, of that 114 completed these questionnaires. First, we analyzed the data using exploratory factor analysis. The results suggest that students are aware about seminars serve as a community for interaction among a teacher and students as well as a means of professional education, and they appreciate the seminars' value that exceeds at improving their expertise. Next, we divided the 1293 students' data into "Within model" and "Between model" categories, because the multilevel data collected in this study includes individual and seminar levels, and calculated the correlation coefficients using multilevel correlation analysis. The results indicate that the following three variables correlate positively with growth in the skills of problem solving and personal relationship development, and satisfaction in seminar levels: (1) students' motivations for learning in cooperation with others; (2) students' senses of communities such as cohesion and reciprocity; and finally, (3) students' acquisitions of expertise.

(462words)

Please include the following six items with your proceedings submission:

1. Title of the submission: From Preservice To Inservice: Transferring Linguistic, Cultural, And Technological Awareness Into Teaching Practice

2. Name(s) of the author(s): Congcong Wang

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6. Abstract and/or full paper:

From Preservice To Inservice: Transferring Linguistic, Cultural, and Technological Awareness  
into Teaching Practice

Teacher Education

Paper Session

The continuing linguistic, cultural and technological diversity among K-12 students and the increasing influence of Internet technologies on learning bring challenges in teaching to today's teachers, this research presentation includes a literature review, research questions, methodology, and a model of effective teacher linguistic, cultural and technological awareness transfer.

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**Abstract**

In a pilot study on native-English-speaking preservice teachers' perceptions of learning a foreign language online, Wang (2012) suggested that pre-service teachers perceived that their experience as new language online learners increased their linguistic, cultural and technological awareness, which would further benefit them when working with diverse students. However, the pilot study was unclear about whether teachers perceived they transfer their awareness into teaching practice in a shift from preservice to inservice teachers. Therefore, extending the pilot study, the follow-up study conducted in 2012 explored inservice teachers' perceptions of linguistic, cultural and technological awareness transfer. This follow-up study suggested a model for teacher linguistic, cultural and technological awareness development and transfer, as well as a discussion of issues related to teacher awareness transfer.

**Keywords:** Teacher, linguistics, culture, technology, awareness, transfer

Title: Enhancing Research Experience Among Underrepresented Community College Engineering Students through a Collaborative Research Internship Program at San Francisco State University.

Topic area: Other Areas of Education: Engineering education

Presentation format: Poster Session

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Abstract:

This paper describes a collaborative research project between a Hispanic-serving community college and a large urban university to address how to recruit, retain and inspire underrepresented community college students through a summer research internship program. This project is funded by the NASA Curriculum Improvements Partnership Award for the Integration of Research (CIPAIR) program through a three-year grant, the ten-week summer research internship program which provides opportunities for freshmen and sophomore community college students to participate in engineering research under the supervision of a university professor and a graduate student mentor at the four-year university research facility.

Meeteer, W. R., Schneider K. R., Nolan, J. A., & Campbell, H. D.

“Healthcare Provided to High School Athletes in Rural Appalachia”

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## **Introduction**

Over the past few decades there has been a consistent rise in participation in high school athletics. According to the National Federation of High School Sports there is now an estimated 7.6 million athletes in the United States that compete in high school interscholastic athletic competition. With a constant increase in athletic participation, safety has become a national concern. The National Athletic Trainers Association (NATA) along with numerous other allied health and medical professions agree that certified athletic trainers (ATCs) should be involved in the everyday operation of interscholastic sports in order to deliver medical care to athletes (Lyznicki 1999). Numerous states have taken the steps to implement legislation designed to protect athletes such as requiring schools to employ healthcare professionals, having written emergency action plans, and passing concussion legislation. Rural areas experience disproportionate health disparities and often have fewer healthcare resources (Pleis & Lethbridge-Cejku, 2007). There is little research examining the management of secondary school sports programs and the health care provided to athletes in rural areas. The purpose of this study is to determine the level of medical care and coverage that is provided to secondary school athletes in a rural state in Appalachia.

## **Methods**

A cross-sectional survey was administered online in the spring of 2013. Through collaboration with the state Department of Education the SurveyMonkey survey link was sent to all public high school principals throughout a rural Appalachian state.

The Self-appraisal Checklist for Health Supervision in Scholastic Athletic Programs was used to assess health care coverage for high school athletes (American Academy of Pediatrics, 1993). Questions were combined to measure four main categories: 1. Organization,

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administration, and staffing; 2. Facilities and equipment; 3. Event coverage; & 4. Education.

Open-ended qualitative questions assessed barriers and facilitators to successful sports medicine programs.

### **Data Analysis**

Analysis included descriptive statistics and group comparison conducted through One-way ANOVA with Tukey's post hoc test to assess mean differences in the four categories by school size.

### **Results**

Sixty-two schools were represented in the study. The majority (80%) reported that their school was in a rural setting. School size included 1A (43.5%), 2A (19.4%), and 3A (35%). No significant difference was found between size of school (1A-3A) and Athletic training education, Event coverage, or Facilities and equipment. There was a significant difference however in the Organization, administration, and staffing ( $F(2,46)=5.206$ ;  $p=.009$ ). Tukey Post hoc test showed that 3A schools had significantly greater organization, administration, and staffing when compared to 1A ( $p=.042$ ) and when compared to 2A schools ( $p=.014$ ). The majority (90%) provided medical training personnel at football practices and games. This coverage was much less for all other sports. Only 43% reported that an emergency action plan is in place always, 11% reported sometimes, 5% seldom, 16% never, and 25% did not know. Concerning CPR certification, 33% reported that coaches were CPR certified always, 25% reported sometimes, 11% seldom, 7% never, and 24% did not know. The majority of participants reported limited funding and inability to fill open positions as barriers to a successful sports medicine program.

## **Discussion**

Important issues can and should be discussed based on the results including significant differences between 1A and 3A high schools in the area of organization, administration, and staffing; the level of health care provided during games and practices; and knowledge of the health care provided. Money will always play a major role in the quality of services provided. Larger 3 A schools with more students and tax dollars have the ability to provide more services than 1A schools. Almost 90% of schools always provided trained medical personnel for football practices and games. This statistic shows quality compliance with state regulations requiring school to provide medical services for all football practices and games. Under the current state regulations secondary schools are only required to provide medical services for football. The survey data shows no other sport received medical services even 40% of the time. Another big concern from the survey is the principals lack of knowledge. Almost 25% reported not knowing if there was an emergency action plan in place or if coaches maintained current CPR or First Aid training.

Currently there are no known state plans in place to fix any of the issues emerging from this data. In the future school and sport governing bodies need to look into educating school administration on current regulations and requiring higher levels of medical services be provided to all interscholastic sports (i.e., requiring coaches to keep current CPR and First Aid certifications, requiring all schools to develop an emergency action plan, and providing more medical care to all sports not just football). Future research and interventions should examine best practices for increasing compliance and protecting high school athletes in rural areas with existing health care disparities.

Meeteer, W. R., Schneider K. R., Nolan, J. A., & Campbell, H. D.

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## **Case Studies in Peace Education through Peace Museums :**

### **A Trip to Hiroshima and Nagasaki**

Kazuyo Yamane

Ritsumeikan University

#### **Abstract**

The research objective is to find roles of peace museums in peace education in a trip to Kyoto, Hiroshima and Nagasaki by students from the United States, Japan, China, Korea, etc. This trip started in 1995 when the atomic bomber was exhibited at the Smithsonian Institution without showing the result of the atomic bombing such as photos of suffering atomic bomb survivors. Students visited Kyoto Museum for World Peace, Hiroshima Peace Memorial Museum, Nagasaki Atomic Bomb Museum and Oka Masaharu Memorial Nagasaki Peace Museum in August. The methodology is participatory: the author visited these peace museums with such international students. One of the expected outcomes is that peace museums can play important roles in promoting better understanding of history, and education for peace and reconciliation. Students have different history concepts and their visit of peace museums tends to make them think of the other side's historical viewpoints. This happened between American students and Japanese students as well as between Chinese/Korean students and Japanese students. Better understanding of history tends to lead to promoting

reconciliation and peace, and peace museums should be used for peace education more.

## **I. Introduction**

In 1995 the Enola Gay, the atomic bomber, was exhibited at the Smithsonian Institution commemorating the 50<sup>th</sup> anniversary of the atomic bombings, but artifacts and photos of atomic bomb survivors were not exhibited. However, they were exhibited at American University in Washington D.C. Then a peace trip to Hiroshima stated in 1995 by Professor Atsushi Fujioka of Ritsumeikan University and Professor Peter Kuznick of American University. They started to take their students to Hiroshima in 1995 and then they added a trip to Nagasaki in 1996. In 2011 students of the author's class called "Peace Studies Seminar" started to join them: there are international students from various countries such as China, the Republic of Korea, England, Thailand, and so forth. The class was named "the most creative and innovative" summer program in North America by the North American Association of Summer sessions according to the following website.

( <http://peacephilosophy.blogspot.jp/p/hiroshimanagasaki-summer-tour-2012.html> )

Students in various countries tend to have different historical concepts. American students tend to learn that the atomic bombing was necessary without learning the result of the atomic bombing such as atomic bomb survivors' suffering from effects of the atomic bombing. On the other hand, Japanese students tend to learn simple facts of the atomic bombing, but modern history tends to be skipped at school because it is often excluded in entrance examinations to universities. However, children in Hiroshima and Nagasaki usually study historical facts of the atomic bombing and the suffering of atomic bomb survivors though they do not learn the result of Japan's aggression such as people's suffering in China and Korea much.

Chinese and Korean students tend to learn that the World War II was ended because the atomic bombs were dropped on Hiroshima and Nagasaki. They also do not learn the result of the atomic bombing and the atomic bombed victims' suffering. They tend to learn Japan's aggression of other Asian countries and how much people suffered from Japan's aggression. On the other hand, Japanese students do not study Japan's aggression at school and public peace museums. There tend to be big gaps of historical concepts between Chinese/Korean students and Japanese students.

How did they study different histories in the trip? What happened to their historical concepts after the trip? This article examines the history education for peace and some roles of peace museums.

## **II. Different Concepts of History of Students among Japan, the USA and China/Korea**

### **1. Different Concepts of Atomic Bombing**

The trip to Hiroshima and Nagasaki in 2013 was different from an annual event because Oliver Stone participated in a seminar in Nagasaki. He is a well-known American film director who received three Academy Awards for his work on the films such as *Platoon*, and *Born on the Fourth of July* about the Vietnam War, in which he had participated. He also produced films that criticize corruption and conflicts of American government. A book of *The Untold History of the United States* was written by Oliver Stone and Peter Kuznick, a professor of history and director of the award-winning Nuclear Studies Institute at American University. It was published in 2012 and a 10 part documentary film series was broadcast on Showtime in the United States in November 2012. It was also broadcast on NHK TV in Japan in 2013.

It is shocking to know that “Erroneously convicted that the bombs had ended the

war, 85 percent of the American public approved of their use.” (Kuznick & Stone, 2012, p. 176) The authors wrote that it is unknown to most of the public that “many U.S. top military leaders considered the bombings either militarily unnecessary or morally reprehensible.” (Kuznick & Stone, 2012, p. 176) For example, Truman’s chief of staff, Admiral William Leahy, who chaired the meetings of the Joint Chiefs, proclaimed as follows: “the Japanese were already defeated and ready to surrender....The use of this barbarous weapon at Hiroshima and Nagasaki was of no material assistance in our war against Japan. In being the first to use it we adopted an ethical standard common to the barbarians of the dark ages.”(p. 176) It must be surprising for Americans to know that it was not necessary to drop the atomic bombs on Hiroshima and Nagasaki reading such American leaders’ testimonies.

The authors also clarified that what made Japan decide to surrender was not the atomic bombing but the Soviet’s entry into the war as follows: “Though the atomic bombs certainly contributed to the Japanese decision to surrender, they were ancillary to U.S. island hopping, bombing, and blockade and to the dramatic impact of the Soviet invasion, which convinced the Japanese leaders that even holding on for the last decisive battle on the Japanese mainland was no longer a viable option.” (p. 178)

Gar Alperovitz, an American historian, also criticizes the atomic bombing saying that “Quite simply, it is not true that the atomic bomb was used because it was the only way to save the “hundreds of thousands” or “millions” of lives as was subsequently claimed.” (Alperovitz, 1995, p. 629) He also insisted that it was not necessary to use the atomic bombs as follows:

It is clear that alternatives to the bomb existed and that Truman and his advisers know it ... Why then were the atomic bombs used? ... Some

writers also suggest that because huge sums were spent developing the new weapon, the US political leadership found it impossible not to use it. Most relevant to the Smithsonian flap is substantial scholarly acceptance of the once controversial idea that diplomatic issues – especially the hope of strengthening the West’s hand against the Soviet Union – played a significant role in the decision. (Alperovitz, 1994)

What he meant by “alternatives to the bomb” was to guarantee the continuation of the emperor system in the Potsdam Declaration. Alperovitz insisted, “We must also note that all along – as Truman subsequently acknowledged on many occasions – it appears to have been clear to those concerned that in the end the Emperor would in any event almost certainly have to be retained to command a cessation of the fighting and to maintain internal order. (And, of course, five days after the bombing of Hiroshima, his position was in fact assured by the president.) (Alperovitz, 1995, 632)

However, such a condition was deleted by President Truman from a draft of the Potsdam Declaration in order to drop the atomic bombs as experiments. (Kimura & Kuznick, 2010, p. 19) An atomic bomb made from uranium-235 was dropped on Hiroshima on August 6 while an atomic bomb made from plutonium-239 was dropped on Nagasaki on August 9 1945. Why were the two different types of the atomic bomb used though Japan was seeking to end the war through the Soviet Union as a mediating power (Yamane, 1995, p. 11) It is clear that the atomic bombs were used as a human experiment because “a test of plutonium type atomic bomb was successful, but it had not been used at an actual fighting.” (Kimura & Kuznick, 2010, 190) The ABCC (Atomic Bomb Casualty Commission) was founded in Hiroshima in 1947, but only health examinations of atomic bomb survivors were done without any treatment. This means that atomic bomb survivors were treated as guinea pigs.

In Nagasaki students were very lucky to have Oliver Stone as a guest at a seminar.

A student asked Oliver Stone how the two authors of the book started to write it. Professor Peter Kuznick said that he showed Stone's films at American University and his students suggested they meet Oliver Stone. Professor Atsushi Fujioka mentioned in his book review that it was an interesting combination of an artist and a historian. (Fujioka, 2013) Students were very impressed to watch the film of "The Untold History of the United States" when it was shown to them. Since only a part of the film on the atomic bombing was shown, they said that they also wanted to watch other parts of the film. It seems that their historical concepts were greatly changed by the film.

## **2. Atomic Bomb Survivors' Testimonies**

Though there are differences of historical concepts on the atomic bombing among students in the United States, Japan, China and Korea, students seem to learn much about the horror of nuclear weapons listening testimonies of atomic bomb survivors in Hiroshima and Nagasaki. The students were said to be the last generation who can listen to atomic bomb survivors directly because the survivors are getting very old and they tend to pass away. They also started to think that they needed to disseminate the atomic bomb survivors' memory to other people, especially to children and young people so that nuclear weapons would never be used again. The following is some students' responses to atomic bomb survivors' testimonies.

A student wrote an essay that she was most impressed by Koko Kondo's story. She was atomic bombed in Hiroshima when she was only eight-month old. Her father is the Reverend Mr. Kiyoshi Tanimoto whose experiences in Hiroshima are vividly described in John Hersey's book called *Hiroshima*. (Hersey, 1972, p. 2-7) It was published by *The New Yorker*, a leading American weekly magazine in its August 31, 1946 issue, almost a year after the atomic bombing. It describes what life was like for atomic bomb victims who survived a near attack. Since Koko Kondo was only 8

month-old when the atomic bomb was dropped on Hiroshima, she has no memory at that time. However, she said that she learned the horror of an atomic bomb watching burn scars that seemed to pull tight in faces and bodies of neighbors. She often thought of taking her revenge on a pilot of the bomber called Enola Gay for dropping the atomic bomb and killing and injuring many people in Hiroshima. When she was ten, she went to the United States to attend a TV program where her father met Robert Lewis, a copilot of the bomber. Her father took twenty-five women who were going to have an operation for burns in the United States at that time. Koko was very shocked to meet Robert Lewis because tears formed in his eyes when he was asked a question about his thought after the atomic bombing by a TV caster. He wrote, "What have I done?" in his diary, but it is said that such an attitude was criticized by the government and he had to stay in mental hospital. Koko Kondo realized that he had also suffered from the atomic bombing and her hatred toward him decreased, she said. She said to the students, "War hurts both sides leaving only sadness" with tears in her eyes. A student wrote that she learned that tremendous courage was necessary to forgive enemies who you had hated.

The students also listened to Mrs. Keiko Ogura who was about 2.4 km away from the epicenter of the atomic bomb. She founded Hiroshima Association of Translators for Peace in 1984 and has been active to inform foreign visitors of the result of the atomic bombing using English. She said to the students, "Foreigners come to Hiroshima to see what happened in Hiroshima and also to learn how people in Hiroshima recovered their energy overcoming hatred." A student said that she learned it was important to make the tragedy a good chance to make the better future. A student from Turkey said, "It would be normal to think of revenge after an atomic bomb was dropped because people suffered so much. But it is wonderful that atomic bomb

survivors have been working hard to abolish nuclear weapons.” It is important to learn from such atomic bomb survivors though they have been suffering physically and mentally. There has been no apology and compensation by the US government, which makes the situation worse.

In Nagasaki Mr. Sumiteru Taniguchi aged 84 talked about his horrible experiences showing his photograph of his back which had been seriously burnt. He said, “I almost died after the atomic bombing. However, I decided to live after going through many operations because I need to convey the horror of atomic bombs to future generations.” Listening to him, a student wrote, “I’d like to convey atomic bomb survivors’ strong messages for peace to the next generation.”

Students attended a peace ceremony at Shiroyama elementary school in Nagasaki before they attended an official Nagasaki peace ceremony on August 9. The school was only 500 meters away from the hypocenter of the atomic bomb and many children and teachers died. A part of the school building is used as a peace museum so that children and citizens can learn what happened there on August 9 1945. All the pupils of the school attended the peace ceremony and a representative of each class made a pledge for peace. They sang peace songs, which made the college students feel “we want to protect such lovely children.” A student said that she noticed why atomic bomb survivors had been working so hard for the better future.

Such atomic bomb survivors are getting very old and they tend to pass away. How is it possible to convey the horror of nuclear weapons and the preciousness of peace to the next generation? Peace museums have been playing important roles to promote peace education and history education for peace. Before they went to Hiroshima and Nagasaki, they visited Kyoto Museum for World Peace at Ritsumeikan University. In the trip to Hiroshima and Nagasaki, students visited Hiroshima

Memorial Peace Museum, Nagasaki Atomic Bomb Museum, Nagasaki National Peace Memorial Hall for the Atomic Bomb Victims and Oka Masaharu Memorial Nagasaki Peace Museum. What were their responses to these peace museums?

### **III. The Roles of Peace Museums**

Before students visited Hiroshima, they visited Kyoto Museum for World Peace at Ritsumeikan University in Kyoto. First, some peace museums will be briefly explained and students' responses will follow.

#### **1. Peace Museums that Students Visited**

In 1992 Ritsumeikan became the first university in the world to open a peace museum. It shows not only the history of war and peace movements but it also helps each of visitors think about what they as individuals can do to promote the cause of peace. While it is important for human beings to be able to live without fear, just being alive is not enough. "Having a goal and devoting our energies to achieving it makes life worth living. However, there are many things in the world today that prevent us from leading such a life. While it is important for governments and the United Nations to work to eliminate these problems, there is much that ordinary people, working as individuals and through non-governmental organizations, can do to help. It is our hope that the exhibits will serve as a place where together, we can think about what we can do for peace" according to Professor Ikuro Anzai, honorary director, on its website: <http://www.ritsumei.ac.jp/mng/er/wp-museum/> It is possible to say that Kyoto Museum for World Peace is a comprehensive private peace museum in Japan.

Hiroshima Peace Memorial Museum was founded in 1955 in Hiroshima. The aim is to ensure that the reality of the nuclear bombing is passed down to future

generations and to spread “the spirit of Hiroshima” which entreats the realization of total abolition of nuclear weapons and an eternal world peace. (Yamane, 2008, p. 41)

In the East Building the story of Hiroshima before and after the atomic bombing is displayed. In the main building the story of August 6 is explained using photographs, the belongings of A-bomb victims, and other artifacts. An emphasis is put on the atomic bombing and atomic bomb survivors’ suffering while Japan’s aggression is not exhibited much. The details on the museum and the Peace Memorial Park are available on the website in English: <http://www.pcf.city.hiroshima.jp/>

Nagasaki Atomic Bomb Museum was founded in 1955 in Nagasaki City. The purpose of the Nagasaki Atomic Bomb Museum is “to disseminate the reality of the atomic bombing and citizens’ wishes for peace in Japan and the world and to contribute to the abolition of nuclear weapons and the realization of peace” according to the returned questionnaire which the author sent. As for the exhibition, the section as a prelude to the main exhibits introduces the scenery and customs of Nagasaki just before the atomic bombing. A clock that stopped at 11:02 a.m., the moment of the explosion, is displayed to show how the people were destroyed in an instant. By exhibiting the devastating scene of Nagasaki just after the atomic bombing, this section provides visitors with an understanding of the fearsome destructive power and horrors of the atomic bombing. The section of “Toward a World free from Nuclear Weapons” provides visitors with an opportunity to think about issues related to war, nuclear weapons and peace in order to realize a world without nuclear weapons. Documentary films related to the atomic bombing are shown in the Video Room. The facilities include a Q&A corner regarding the atomic bombing and peace, and a reference system to find documents such as Nagasaki's Peace Declaration according to its website as follows:

[http://www1.city.nagasaki.nagasaki.jp/abm/abm\\_e/index.html](http://www1.city.nagasaki.nagasaki.jp/abm/abm_e/index.html)

There is also Nagasaki National Peace Memorial Hall for the Atomic Bomb Victims which was founded in 2003 in Nagasaki City. It was founded by the Japanese government “to convey the hardship of the atomic bomb victims to the future generations and pray for peace” according to *Muse* 9 published in September, 2003. (*Muse* newsletter of the Japanese Citizens Network of Museums for Peace has been edited by Masahiko Yamabe, Ikuro Anzai and the author twice a year both in Japanese and English. It is available on the website of the Center of the Tokyo Raids and War Damage: <http://www.tokyo-sensai.net/>.) The main functions of the Memorial Hall are to provide places to pray for those who died after exposure to the atomic bombings, and to encourage people to contemplate peace. It also maintains archives of materials on the atomic bombings and radiation illnesses, and serves as a center of international cooperation and exchange according to its website. The website is written in English, Chinese, Korean and Japanese as follows: <http://www.peace-nagasaki.go.jp/eng/ftop.html>

Oka Masaharu Memorial Nagasaki Peace Museum was founded in 1995 in Nagasaki City. It was founded by citizens “to shed light on Japan’s aggression through the presentation of historical facts and to keep alive the legacy of the late Rev. Oka Masaharu, who devoted his life to calling Japan to account for damages and suffering by Japan’s aggression” according to the museum guide. The museum plays an important role in peace education with an emphasis on Japan’s aggression in spite of some nationalists’ criticism of the museum. It is impressive that German conscientious objectors used to work there, and the members of the peace museum have been working hard for reconciliation with Chinese victims of Japan’s aggression. The details are available on the website in English and Japanese as follows: <http://www.d3.dion.ne.jp/~okakinen/>

## **2. Students Responses to the Peace Museums**

The students visited such five peace museums and learned what happened in Hiroshima and Nagasaki as well in China and Korea during World War II. Public peace museums such as Hiroshima Memorial Peace Museum, Nagasaki Atomic Bomb Museum and Nagasaki National Peace Memorial Hall for the Atomic Bomb Victims tend to put an emphasis on the atomic bombing which is the victim side of Japan during the war. The same thing can be said in other public peace museums according to the author's questionnaire conducted in 2001. (Yamane, 2006, p. 47) Oka Masaharu Memorial Nagasaki Peace Museum is a private peace museum where there is relatively freedom of speech whereas directors of public peace museums tend to make exhibitions on Japan's victims side of the war only without showing Japan's aggression. This is because nationalists tend to criticize exhibitions on Japan's aggression since the 1990s. Kyoto Museum for World Peace is also private and it has freedom of speech because it exists on campus: exhibitions are based on peace research and well balanced, which means that not only Japan's victims side of the war but also Japan's aggression is honestly exhibited. This is a good start of the students' visit to prepare for their trip to Hiroshima and Nagasaki.

What were their responses to these peace museums? It seems that American students tend to be shocked to see exhibitions at the Hiroshima Memorial Peace Museum and Nagasaki Atomic Bomb Museum. This is because they learned that the atomic bombing ended World War II and many American soldiers did not have to die fighting against Japan. An American student mentioned that he had not learned the result of the atomic bombing: how much Japanese people suffered from the atomic bombing. Chinese and Korean students also learned in their history class that the

atomic bombs ended World War II and many lives in China and Korea were saved. However, they were also shocked to know how horrible the atomic bombs were.

On the other hand, Japanese students tend to be shocked to know Japan's aggression exhibited at Oka Masaharu Memorial Peace Museum in Nagasaki. This is because they did not study Japan's aggression such as Nanjing Massacre and women who were forced to work as sexual slaves by Japanese military during the war. A Japanese student said that it was important to understand Chinese and Korean suffering by Japan's aggression because this would be the first step to understand history and create the peaceful world.

It seems that students from Japan, China, the Republic of Korea and the United States learned the history of World War II from different viewpoints and understand one another more than before.

#### **IV. Conclusion**

The trip to Hiroshima and Nagasaki promoted the students' better understanding of history for peace and reconciliation. Atomic bombed survivors are getting older and older and it is hard to have a chance to listen to their testimonies directly. Under such circumstances, peace museums can continue to play important roles to promote peace education. It is encouraging to know a student who changed her attitude toward her grandmother. She was not interested in listening to her experiences during World War II, but she said that she began to think of listening to her story after visiting Hiroshima and Nagasaki. She even said that she would need to convey what she learned from atomic bomb survivors to the next generation. Professor Peter Kuznick said that the trip tends to become a life-changing experience for American students. The same thing can be said among students from Japan, China and Korea also.

Last but not least it is regrettable that Japanese students did not have a chance to learn what happened to American soldiers in Pearl Harbor. It would be worth considering an inclusion of studying the result of Japan's attack of Pearl Harbor in the future peace trip.

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**Using Factor Analysis and LSAY Data to Explore Family and Peer  
Support on Adolescents' Academic Achievement**

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## **Introduction**

When the word “test” is mentioned, people tend to think that tests are typically used to evaluate students on various learning outcomes. However, there is an emerging trend now in education (e.g., value-added-evaluation) where the testing of students is used to evaluate quality of teacher practices as well as the effects of programs or interventions in the entire educational system. When poor test results are present at the individual student level, we would conclude that the students did poorly on the test and that by inference they failed to learn what they were supposed to learn. If poor test results are looked into at the school level, researchers tend to conclude that the schools have failed to help their students to learn and that by inference teachers ought to be blamed for their responsibility of poor instructions. As a result, proposals and plans are usually made for immediate action of improvement. The United States of America is a country often called a "nation of immigrants", there are so many factors affecting schooling and the school outcomes and student outcomes given the diversity of students in today’s schools. When test scores are used to make inferences about school outcomes and education policy, shall we ask what exactly test scores can tell us and what unobservable factors influence students’ scores?

Many studies have examined students’ achievement with respects to the predictors of social economic status (SES), race, and/or gender differences. For example, researchers claim that poor academic performance and underachievement among ethnic minority youth, compared with Caucasian youth, is a well-documented and pervasive problem in contemporary American public schools (e.g., Becker & Luthar, 2002; Jencks & Phillips,

1998; Vanneman, Hamilton, Anderson, & Rahman, 2009). Achievement disparities are especially baffling for ethnic minority boys who increasingly lag behind not only their Caucasian male counterparts, but also girls within their own ethnic group (Coley, 2001). Among African Americans, for example, girls achieve more academic success than boys from middle school (Jordan & Cooper, 2003). Similar academic patterns favoring girls over boys have been documented among Latino youth (e.g., Portes & Rumbaut, 2001; Suárez-Orozco & Qin-Hilliard, 2004). However, the importance of parents' expectation and peer support on adolescents' academic achievement has been underscored by many theorists and researchers. Therefore, this study aims to explore how unobservable factors, for example, family and peer support, influence adolescents' achievement and how does one quantitatively describe these unobservable factors/constructs. One exploratory factor analysis (EFA) and two separate confirmatory factor analysis (CFA) were applied to the dataset of the Longitudinal Study of American Youth (LSAY), by using Mplus 6.0 (Muthén & Muthén, 1998-2010).

According to Fabrigar et al. (1999), EFA is based on the common factor model. The goal of this model is to understand the structure of correlations among measured variables by estimating the pattern of relations between the common factors and each of the measured variables (Fabrigar et al., 1999). By performing EFA, items with the highest loadings on each factor would be selected to conduct CFA. Unlike EFA, in which the researcher can only specify the number of factors, in CFA researchers can test much more parsimonious solution by indicting the number of factors, the pattern of factor loadings, and an appropriate error

theory (Brown, 2006). In contrast to EFA, every aspect of the CFA model is specified in advance. The acceptability of the specified model is evaluated by goodness of fit. Further, CFA offers a very strong analytic framework for evaluating the equivalence of measurement models across distinct groups (e.g., two achievement groups in this study). Based on the dataset, the grouping variables in this study is *BYS23C* which was coded as 0 = Not recognized for good grades and 1 = Recognized for good grades. By measuring the same factors in the same way in the two different achievement groups, we can answer the question “*are there mean differences on the factor across groups*”. In other words, the CFA results can illustrate if the two factors have the same influence for students who performed well in study and students who got poor grades in high school. This result might be very helpful for making policy with respect to family and peer support on adolescents’ achievement. Hence, CFA framework is superior in terms of its modeling flexibility (e.g., specify partial invariance models) and its ability to examine potential source of invariance in the factor solution, including latent means and indicator intercepts (Byrne, B. M., Shavelson, R. J., & Muthén, B., 1989). These capabilities permit a variety of important analysis in applied study.

## **Method**

### **Data and Samples**

The Longitudinal Study of American Youth (LSAY) is the longest and most comprehensive longitudinal study of a national sample of public school students ever conducted in the United States. It aims to provide a more intensive longitudinal examination of the development of student achievement in middle school and high school, and the

relationship of those patterns to career choices (Miller, J., Kimmel, L., Hoffer, T., & Nelson, C., 1999). For present study, the particular sample was selected from 10<sup>th</sup>-grade cohort which was started in 2001-2002. The sample included  $N = 2,315$  respondents, 50% male ( $n = 1158$ ) and 50% female ( $n = 1157$ ). After discarding the influence of the missing values, the total number of 2052 respondents were measured in EFA. In CFA, the subsample of people who were “*Not recognized for good grades*” included 879 observations and the subsample of people who were “*Recognized for good grades*” included 953 observations.

## **Variables**

According to Little, Lindenberger and Nesselroade (1999) the issue of variable selection is directly related to the quality of the research design and the value of the results. For the present study, the dataset LSAY used to guide variable selection, all variables related to parents and peer support were selected to measure the influence. This is a limitation of this study because the data was not collected based on the purpose of this study, in other words, it was not an experimental design. EFA was performed first to select variables with the highest loadings on each factor. A subset of the variables in LSAY were chosen for EFA because they measured family and peer support on adolescents’ academic achievement. In CFA, the grouping variables is *BYS23C* which was coded as 0 = Not recognized for good grades and 1 = Recognized for good grades. The latent factor family support included four selected variables based on EFA results. They are listed as follows: *BYS86A* - How often discussed school courses with parents, *BYS86B* - How often discussed school activities with parents, *BYS86C* - How often discuss things studied in class with parents, *BYS86G* - How often

discussed going to college with parents. Another five variables were included in the factor of peer support: *BYS90A* - Important to friends to attend classes regularly, *BYS90B* - Important to friends to study, *BYS90D* - Important to friends to get good grades, *BYS90F* - Important to friends to finish high school, *BYS90H* - Important to friends to continue education past high school (see Table 1 for covariance matrix, means, and standard deviations).

### **Data Screening**

Before conducting EFA and CFA, normality assumption and outliers were examined based on descriptive statistics and Q-Q plots (see Figure 1). Based on cutoff values of  $|2.0|$  for skewness and  $|7.0|$  kurtosis (Chou & Bentler, 1995), no variable showed severe violations of normality. However, outliers (e.g., observations 4, 16, 20, 28 in the variable *BYS86A* - How often discussed school courses with parents) existed in data and they were not deleted from the sample because we are interested in the influence of these special cases on study, the influence of outliers will be shown in CFA results. Case study can be designed to analyze the effect of outliers in future.

### **Analysis Plan**

An EFA was performed to confirm two factors structure based on Kaiser's eigenvalues (Kaiser, 1960) and Cattell's scree plot (Cattell, 1966) and determine the optimal number of variables for each factor. Factor loadings were used to select variable and each variable has a high loading on one factor only. Factor determinants close to 1.0 are considered to indicate how well a factor was measured by the variables (Grice, 2001). Stevens (1992) suggests

using a cut-off of 0.4, irrespective of sample size, for interpretative purposes. When the items have different frequency distributions Tabachnick and Fidell (2007) follow Comrey and Lee (1992) in suggesting using more stringent cut-offs going from 0.32 (*poor*), 0.45 (*fair*), 0.55 (*good*), 0.63 (*very good*) or 0.71 (*excellent*). In my study, at least 4 variables would be selected for each factor because too few indicators for factors could cause Heywood problem (cited from Dr. Karen, Nylund-Gibson, EDUC 216B, Winter 2013, UCSB). Two groups CFAs were conducted separately based on the results of EFA. Variables specified for each factor were allowed to freely correlate, except for the reference variable for each factor, which had a loading 1.0. To examine the model fit, I used the following criteria: chi-square test of model fit, Comparative Fit Index (CFI), root-mean-square error of approximation (RMSEA) fit index, and standardized root-mean-square residual (SRMR) fit index. Fabrigar et. al. (1999) suggested that chi-square is highly influenced by large sample; therefore it is appropriate for checking model fit in this analysis, it was expected to be acceptable with  $p < .05$ . According to Brown (2006), CFI is used to assess relative improvement in fit of the model when compared to a baseline mode.  $CFI > .90$  indicates acceptable fit and  $CFI > .95$  indicates good fit. In addition, Brown (2006) also reported that  $RMSEA < .05$  illustrate close fit,  $.05-.08$  constitutes an acceptable fit, and values  $> .10$  are a poor fit of the model data.  $SRMR < .08$  are considered a good fit, and values close to zero are considered a perfect fit.

## **Results**

Firstly, according to Kaiser's method of interpreting eigenvalues greater than 1.0 as

the possible number of factor solutions and Cattell's scree plot examining for the last "substantial" drop in reduced eigenvalues (Dowdy et al., 2001), both confirmed a two-factor solution. Additionally, four variables with highest factor loadings were selected for factor family support and five variables for peer support (see Table 2 for EFA results).

Next, CFA with two-factor were conducted separately based on grouping variables. Fit indices for subsample of people who were "*Not recognized for good grades*" ( $n = 879$ ) were recorded as follows:  $\chi^2(26) = 97.479$ ,  $p < .01$ , CFI = .971, RMSEA = .056, SRMR = 0.031. According to the fit statistics criteria mentioned above, this model fits the data pretty well. According to Brown (2006), modification indices offer suggested remedies to discrepancies between the proposed and estimated model. In a CFA, there is not much we can do by adding regression lines to fix model fit, because all regression lines between latent and observed variables are already in place. Therefore, in a CFA, we look to the modification indices for the covariances. We cannot covary error terms with observed or latent variables. Thus, the only modification available to us is to covary error terms that are part of the same factor. In the present study, one pair of items with highest EPC (BYS90H with BYS90F) was identified and this re-specified model was reanalyzed with the sample sample. The fit indices were recoded as follows:  $\chi^2(25) = 47.204$ ,  $p < .01$ , CFI = .991, RMSEA = .032, SRMR = 0.025. All standardized factor loadings were greater than .57. The figure below illustrates this rule. The model was improved after modification and it fit the data very closely (see Figure 2 for path diagram).

Similarly, the modified model was applied to the subsample of people who were

*“Recognized for good grades”* ( $N= 953$ ). The results demonstrated a pretty good fit as well,  $\chi^2(25) = 83.084$ ,  $p = .00$ , CFI = .977, RMSEA = .049, SRMR = 0.025. All standardized factor loadings were greater than .56. Figure 3 illustrates the standardized parameter estimates and statistical significance for the *“Recognized for good grades”* group sample (see Figure 3 for path diagram) .

### **Discussion**

Using data from the Longitudinal Study of American Youth (LSAY), an EFA and two group CFAs were used to model student achievement in two dimensions (family and peer support) during high school. A major finding of this study was that family and peer support were associated significantly with the students’ grades during high school. Specifically, in CFA with *“Not recognized for good grades”* group, it demonstrates variable BYS90B (*Important to friends to study*,  $\lambda = .809$ ) has a bigger effect on adolescents’ grades. Further, the sample data was collected from the 50 states in the U.S., thus the analysis results can be generalized. The study, however, had various limitations. For example, data was used to guide the selection of predictors, thus only supports from family and friends were examined. Parenting styles, family structures, or the structure of friendship networks may also influence the achievement of adolescents. Future research needs to examine the form and content of family relationships and friend-ships, and the school climate that may also affect students achievement. In addition, the missing data was coded as 999 in this analysis and their influence was not considered. We assume the data missed randomly, however, we are unsure whether the missingness is unrelated to other variables under study. Missing data

analysis should be conducted in future for study accuracy. Last but not the least, future research is needed for measurement invariance testing because the issue of measurement invariance is crucial for studies that investigate group differences and cross-cultural studies. Especially in the United States which is often called a "nation of immigrants", there are so many factors affecting school outcomes and students' achievement. Sub-groups within populations are often heterogeneous with regard to the parameter values of a model. Thus, group comparisons within a multi-culture also require measurement invariance to insure that potential differences (e.g., in means or regression coefficients) can be interpreted reliably (Brown, 2006).

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Table 1

*Sample Covariance Matirx, Means (M), and Standard Deviations (SD); N = 1481*

	BYS86A	BYS86B	BYS86C	BYS86G	BYS90A	BYS90B	BYS90D	BYS90F	BYS90H
BYS86A	0.480								
BYS86B	0.277	0.521							
BYS86C	0.229	0.252	0.422						
BYS86G	0.197	0.213	0.181	0.474					
BYS90A	0.056	0.083	0.066	0.065	0.390				
BYS90B	0.071	0.086	0.070	0.095	0.258	0.416			
BYS90D	0.057	0.089	0.053	0.075	0.219	0.252	0.379		
BYS90F	0.028	0.068	0.035	0.043	0.174	0.164	0.181	0.338	
BYS90H	0.066	0.095	0.061	0.098	0.222	0.228	0.215	0.223	0.428
M	1.931	2.071	2.002	2.243	2.369	2.195	2.371	2.624	2.409
SD	0.680	0.707	0.651	0.654	0.594	0.630	0.594	0.532	0.619

Table 2

*Fit Statistics*

Factor	$\chi^2$	df	CFI	TLI	RMSEA	SRMR
1	13501.379	405.000	0.530	0.495	0.126	0.326
2	6885.783	376.000	0.766	0.730	0.092	0.150

*Note:* significant at .01 level

Normal Q-Q Plot of How often discussed school courses with parents

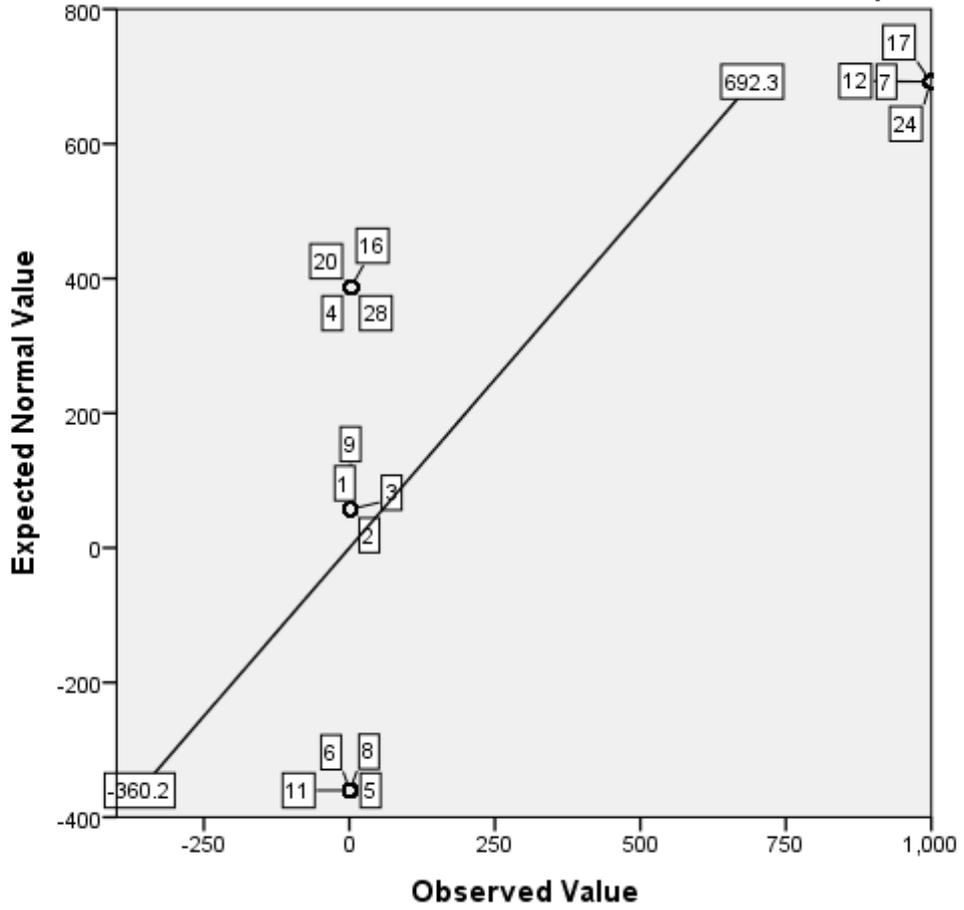


Figure 1. Normality and outliers checking for the variable *BYS86A* - How often discussed school courses with parents.

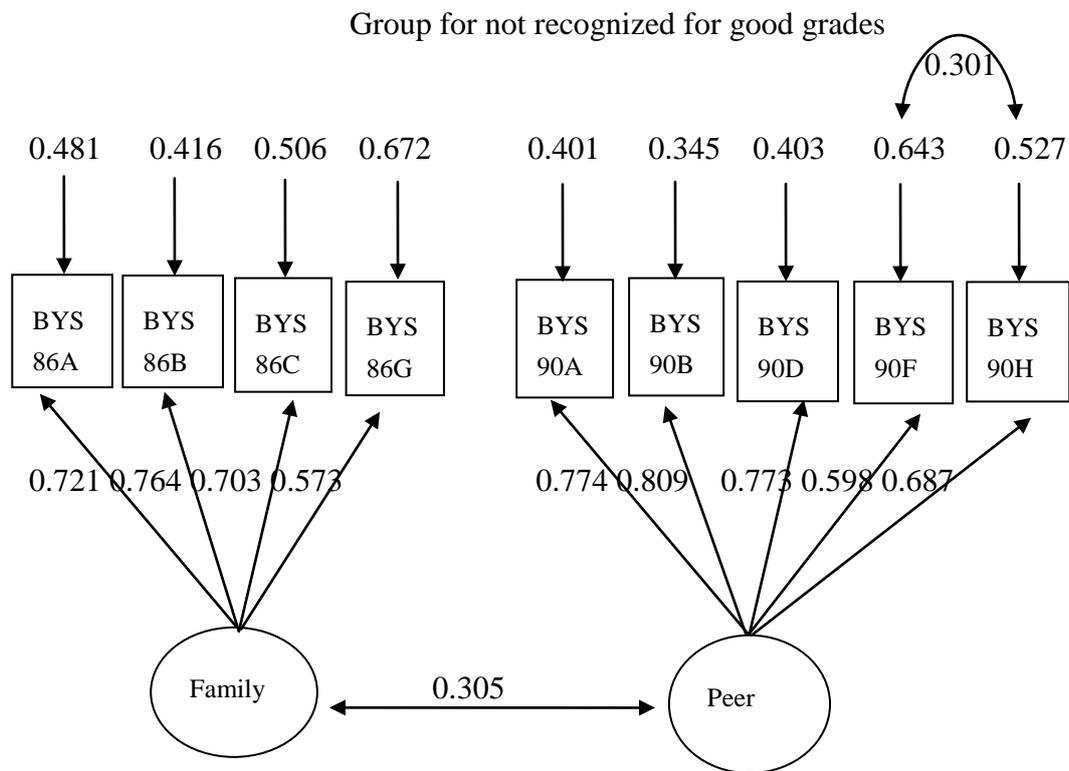


Figure 2. Standardized parameter estimates of confirmatory factor analysis for group “Not recognized for good grades”. All estimates are significant with  $p < .01$ .

Group for recognized for good grades

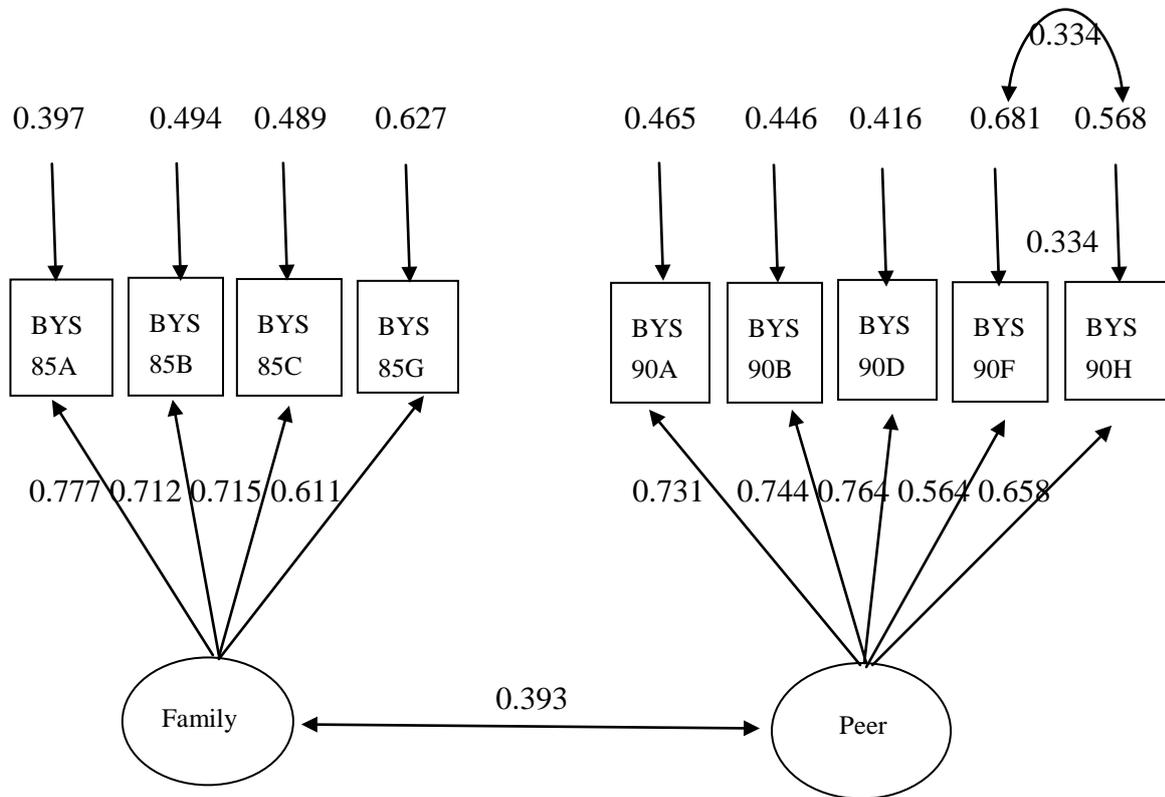


Figure 3. Standardized parameter estimates of confirmatory factor analysis for group "Recognized for good grades". All estimates are significant with  $p < .01$ .

## Title Page for the Submission/Proposal of a Research Paper

1. Title: Examining In-Service Teacher Training for English Language Activities in Japanese Elementary Schools: Discrepancies amongst Local Districts
2. Name: Ai Ohmori
3. Affiliation: Rikkyo University, Japan
4. Address: 3-34-1 Nishi-ikebukuro Toshimaku Tokyo 171-8501
5. E-mail address: aiohmori.jp@yahoo.co.jp
6. Abstract of a research paper ( I would like to submit a full paper to the proceedings at the final submission deadline):

The aim of the present paper is to 1) investigate conditions of in-service teacher training for English language activities in Japanese public elementary schools and 2) indicate what is necessary in order to improve the situation of the present training system. Statistics will be used.

Since April 2011, the introduction of English language activities became mandatory for Grade 5 and 6. Before the introduction of the policy, English language activities were introduced and implemented based on the decisions of individual schools and the local boards of education. Since this created wide discrepancies in the way English activities were conducted, the policy was introduced in order to provide more equal English language activities in Japanese elementary schools throughout the nation.

Perhaps the number of class hours to conduct English language activities, or quantity, became more equal. The author argues, however, because measures that assure quality of the activities such as methodology, curriculum development and teacher training have been left untouched, the discrepancies on the implementation of English language education on quality still strongly remain amongst schools and local districts. In this

presentation, in-service teacher training will be focused.

The author utilizes two sorts of data sets: 1) an original survey that was conducted, and 2) an existing public data set. For the original data set, a survey was sent out to every local Board of Education in Japan by surface mail in the fall of 2011, and received 30 percent of return. It asked about the implementation of English language activities in each local district in detail. The already existing public data set includes data about local municipalities such as the district's population, the number of foreign residents, economic condition, etc. Based on quantitative analyses using SPSS, the following is elucidated: 1) the actual implementation and content of in-service teacher training conducted at the local district level, and 2) its relations with an economic factor of each district.

An expected outcome is that though the introduction of English language activities became mandatory, conditions and content of teacher training remain far from being equal. Furthermore, its implementation is affected by economic factors of local districts. Thus, the author argues that qualities of teachers conducting English language activities are not assured and far from satisfied.

For the presentation, I will first provide a brief history of the current movement towards the introduction of English language education in Japanese elementary schools. Teacher education and license for elementary school teachers in Japan will also be explained. Then, basic information about the survey and data collected will be explained. Finally, the results of data analyses will be reported, and implications for a future policy will be stated.

Learning attitude and motivation of high school EFL learners:  
Examination based on the hierarchical model of intrinsic motivation  
in foreign language learning

Tanaka, Kumiko (Hiro High School)

Tanaka, Hiroaki (Hiroshima International University)

The previous studies (Tanaka, 2009a, 2009b, 2013) proposed *the hierarchical model of motivation in language learning*. It includes trait level, classroom level, and learning activity level. Motivation in trait level is expected to be the most stable. On the contrary, motivation in learning activity level is situational and the most unstable. Motivation in classroom level is moderately stable, but can be influenced by environmental factors. In this study, intrinsic motivation in trait level is called *intrinsic trait motivation*, intrinsic motivation in classroom level is called *intrinsic classroom motivation*, and intrinsic motivation in learning activity level is called *intrinsic motivation to classroom activities*.

The present study aimed to examine the relationship between learners' intrinsic motivation in three levels and their learning attitudes on the basis of the hierarchical model of intrinsic motivation in foreign language learning. The questionnaire survey was conducted for this study to collect data from 84 high school students. Descriptive statistics and correlation coefficients were calculated to see the relationships between these variables. The results showed higher intrinsic motivation relates to more positive learning attitudes.

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# The examination of the hierarchical model of intrinsic motivation in foreign language learning

Tanaka, Hiroaki (Hiroshima International University)

Referring to motivation as a unitary concept is insufficient to explain and fully understand its dynamics in the classroom, because individual motivation exists at different levels of generality. The previous study (Tanaka, 2013) addressed *the hierarchical model of intrinsic motivation in foreign language learning*. In this model, intrinsic motivation was represented within the individual at three hierarchical levels of generality: intrinsic trait motivation, intrinsic classroom motivation, and intrinsic motivation to classroom activities. The present study aimed to examine *the hierarchical model of intrinsic motivation in foreign language learning*. 311 Japanese EFL (English as foreign language) university students who were enrolled in a first-year English language course participated in this study. Descriptive statistics and correlation coefficients were calculated to examine *the hierarchical model of intrinsic motivation in foreign language learning*. The results supported the validity of the model.

# Motivational change and the hierarchical model of intrinsic motivation in foreign language learning

Tanaka, Hiroaki

*Hiroshima International University*

## **The multiplicity of ways to represent motivation**

Self-determination theory (Deci & Ryan, 1985, 2002) is quite an effective framework for describing and predicting learners' intrinsic motivation. Most of the previous motivational studies targeting Japanese EFL learners addressed intrinsic motivation as a trait. However, as Vallerand and Ratelle (2002) pointed out, referring to motivation as a unitary concept is insufficient to explain and fully understand its dynamics in the classroom, because individual motivation exists at different levels of generality. *The hierarchical model of motivation* (Vallerand, 1997; Vallerand and Ratelle, 2002) focuses on a collection of motivations differing in levels of generality; that is, the global level, the contextual level, and the situational level.

Based on the hierarchical model, Tanaka (2009) reconstructed the model for EFL learners' motivation. The model was named as *the hierarchical model of intrinsic motivation in foreign language learning*. In this model, intrinsic motivation was represented within the individual at three hierarchical levels of generality: intrinsic trait motivation, intrinsic classroom motivation, and intrinsic motivation to classroom activities.

The model includes the trait level, the classroom level, and the learning activity level. Motivation in the trait level is expected to be the most stable. On the contrary, motivation in the learning activity level is situational and the most unstable. Motivation in the classroom level is moderately stable, but can be influenced by environmental factors. In this study, intrinsic motivation in the trait level is called *intrinsic trait*

*motivation*, intrinsic motivation in the classroom level is called *intrinsic classroom motivation*, and intrinsic motivation in the learning activity level is called *intrinsic motivation to classroom activities*.

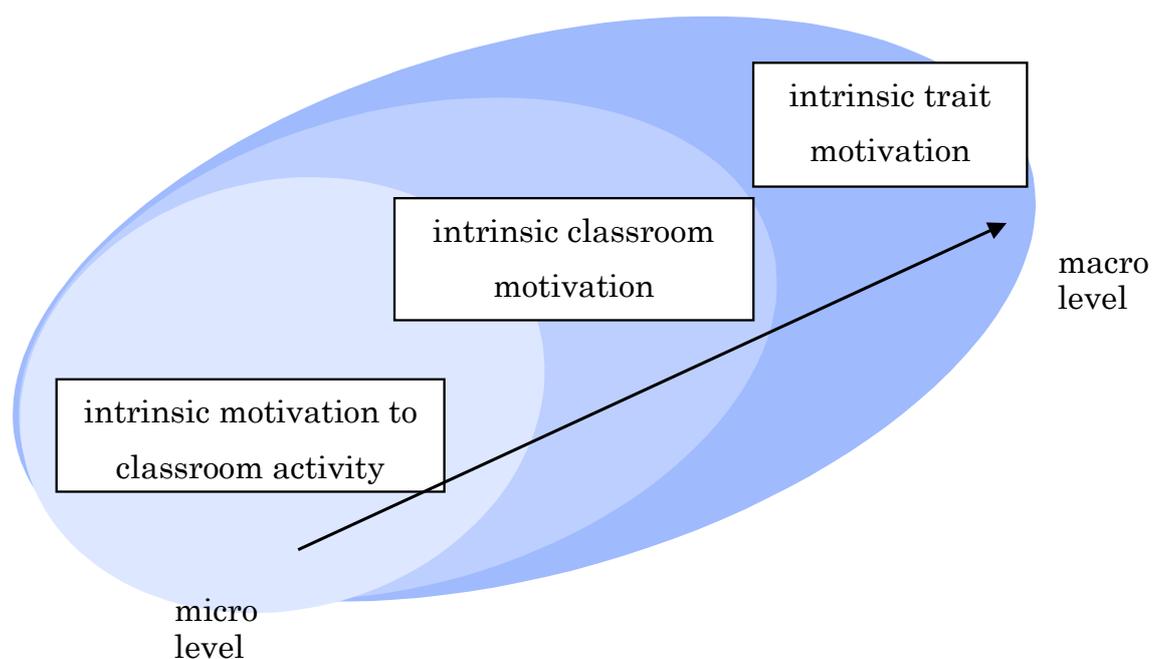


Figure 1. The hierarchical model of intrinsic motivation in language learning

### **Purposes**

Though this model has already been used in some academic research, the statistical examination of the validity of the model is still not enough. This model postulated a bottom-up relationship between motivation at one level and motivation at the next higher level in the hierarchy. If the hypothesis is valid, a higher correlational relationship was identified between intrinsic trait motivation and intrinsic motivation to classroom activity than between intrinsic trait motivation and intrinsic classroom motivation. Thus, the present study aimed to examine *the hierarchical model of intrinsic motivation in foreign language learning* by longitudinal data analysis.

## Procedure

The participants were 311 Japanese EFL (English as a foreign language) university students. The questionnaires were administered to the participants at two different times to see their motivational changes. Descriptive statistics and correlation coefficients were calculated to examine *the hierarchical model of intrinsic motivation in foreign language learning*.

Items from Tanaka (2009) were used for this study. Intrinsic trait motivation was measured by 5 items ( $\alpha = .83, .88$ ), intrinsic classroom motivation by 4 items ( $\alpha = .93, .95$ ), intrinsic motivation to classroom listening activities by 5 items ( $\alpha = .83, .86$ ), and intrinsic motivation to classroom speaking activities by 4 items ( $\alpha = .89, .92$ ). Data were analyzed by SPSS 15.0J for this study. Descriptive statistics and correlational coefficients were calculated.

## Results

The descriptive statistics of motivational subconstructs are shown in table 1 and figure 2.

Table 1.

Descriptive Statistics of Motivational Subconstructs

		<i>M</i>	<i>SD</i>
intrinsic trait motivation	Time 1	5.41	0.88
	Time 2	5.70	0.92
intrinsic classroom motivation	Time 1	5.12	1.28
	Time 2	5.47	1.07
intrinsic motivation to classroom activities	listening Time 1	5.88	0.82
	Time 2	5.96	0.84
speaking	Time 1	5.05	1.14
	Time 2	5.50	1.00

Intrinsic trait motivation, intrinsic classroom motivation, intrinsic motivation to classroom listening activities, and intrinsic motivation to classroom speaking activities slightly increased from Time 1 to Time 2.

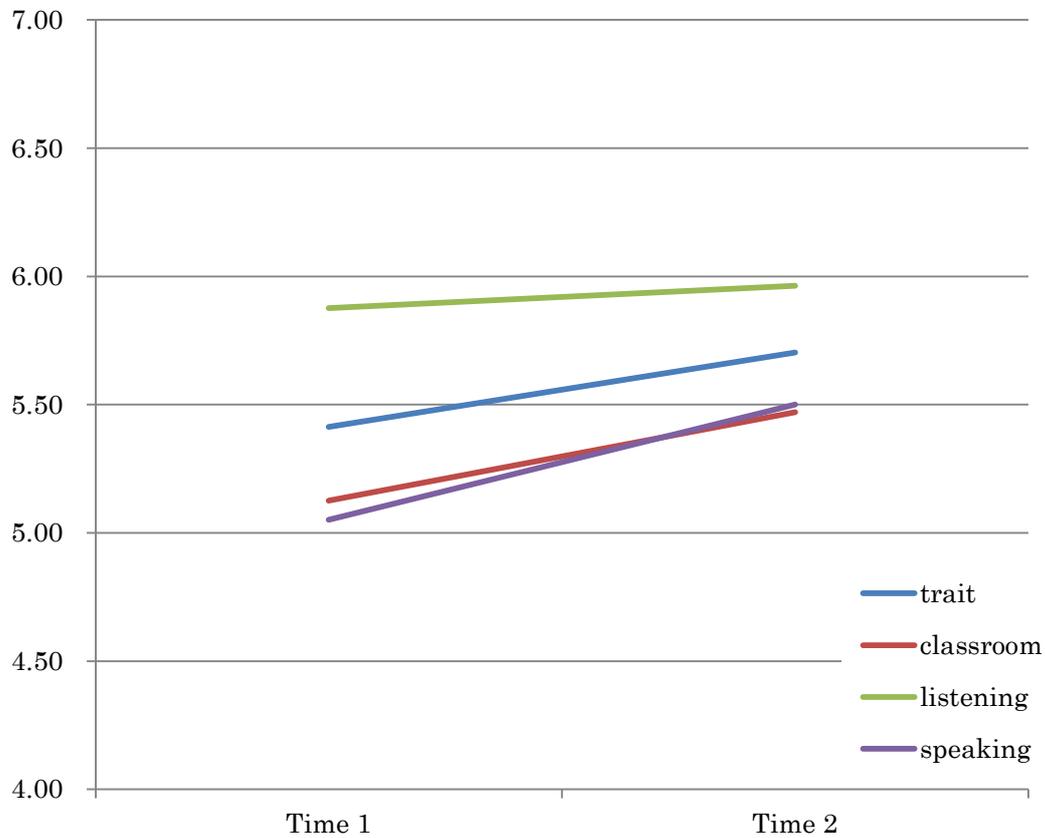


Figure 2.  
Mean Scores of Intrinsic Motivation in Three Levels

Table 3.  
The Correlational Coefficients of Motivational Subconstructs

	trait	classroom	listening	speaking
trait	-			
classroom	.46**	-		
listening	.40**	.42**	-	
speaking	.33**	.37**	.41**	-

Note. \*\* indicates 0.1% significance

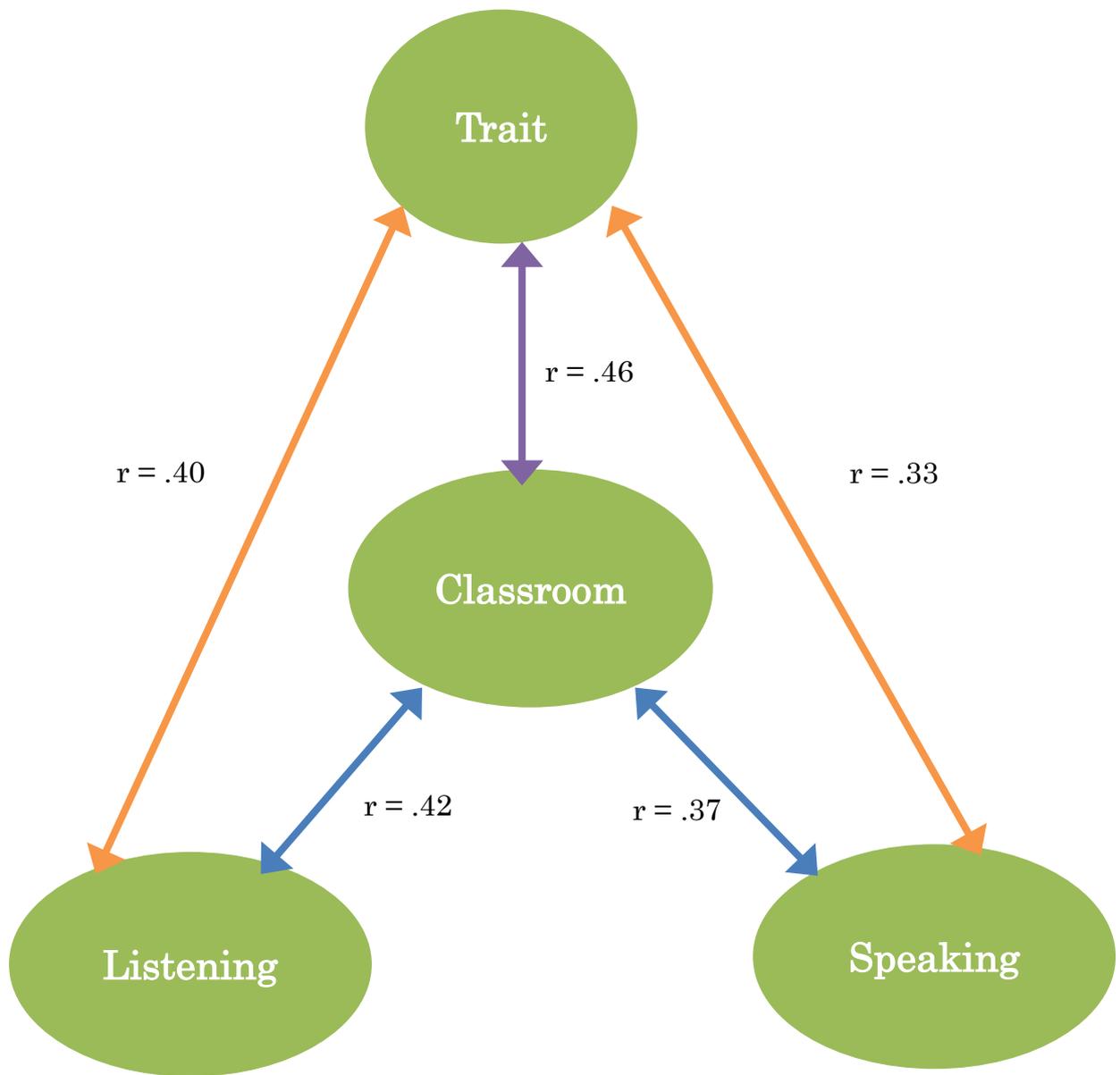


Figure 3.

Hierarchical Model and Correlational Coefficients

The correlational coefficients were calculated (see Table 3 and Figure 3). The results showed that intrinsic motivation to classroom listening activities correlated highly with intrinsic classroom motivation ( $r = .42$ ) and correlated less with trait motivation ( $r = .40$ ). Intrinsic motivation to classroom speaking activities correlated highly with intrinsic classroom motivation ( $r = .37$ ) and correlated less with trait motivation ( $r = .33$ ).

The results supported the validity of the model. That is, a closer relationship between motivation at one level and motivation at the next higher level in the hierarchy.

## **Discussion**

In this study, the validity of *the hierarchical model of intrinsic motivation in foreign language learning* was examined by longitudinal data from Japanese EFL learners. The model postulated the bottom-up relationships between subcomponents of intrinsic motivation. Motivational changes in classroom activity level showed a higher relationship with intrinsic classroom motivation. Intrinsic classroom motivation is in the next higher level in the hierarchy and is anticipated to have a higher correlational relationship with motivation in classroom activities than with intrinsic trait motivation. The results of the study supported the hypothesis.

In this study, correlational analysis was used, not causal analysis, because Vallerand and Rattele (2002) proposed two hypotheses. One is bottom-up relationship and the other is top-down relationship. These two hypotheses were inextricably associated with each other, and it is difficult to analyze these two relationships individually.

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HICE 2014 Paper Submission

1. Title of the submission

Indigenous School Experiences in Meiji Japan: A Case of the Abuta Industrial School  
<1904-1911>

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6. Abstract

In the late 19th century, Japan underwent considerable political and social changes. As a corollary, the Ainu, who enjoyed a certain level of freedom as indigenous people of Northern Japan, could not be spared from the impact of Japan's new nation building. Following the Meiji Restoration of 1868, the northern island *Ezochi* where the Ainu originally inhabited was renamed *Hokkaido*. The Ainu were systematically assimilated into the nation of Japan. Given the growing number of impoverished Ainu, *the Former Natives Protection Act*, which shares some similarities with the Dawes Act of 1887 (Tomita, 1989&1990), was promulgated by the Imperial Diet in 1899. Following this Act, some twenty-three elementary schools were established between 1901 and 1907 in Hokkaido (Ogawa, 1992, p. 199). Then, the school enrolment ratio of Ainu children increased rapidly, from 17.9 % in 1895 to 84.2 % in 1907 (Ogawa, 1992, p.201). However, the education that Ainu children received was principally assimilation-oriented and use of the Ainu language was strictly prohibited in schools.

Under these circumstances, the Abuta Industrial School (*Abuta Gakuen*) was founded in Abuta (Hokkaido) on February 10, 1904 by the Association of Saving and Educating Hokkaido Former Aborigines (ASEHFA). The purpose of this school was to promote

self-support for the indigenous Ainu youth by providing practical knowledge and skills. Having modeled Hampton Normal and Agricultural Institute in Virginia, the Abuta school was the first private boarding school in Japan specifically designed for indigenous Ainu students who completed elementary school. Jenichiro Oyabe, who studied at Hampton in the late 1880s, played a key role to establish the school. He served as pastor of the Japanese church in Hawaii for a few years, after being awarded a Bachelor of Divinity degree from Yale University. He was keen about the indigenous issues in Japan and broadened his knowledge on boarding schools for Native Americans and Hawaiians while his stay in the United States. It would not have been realised without Oyabe's unique experiences in several American universities and Hawaii.

The purpose of this study is to examine the process of educational transfer in early twentieth-century Japan, specifically focusing on the role of Oyabe and the curriculum of Abuta Industrial school. Drawing upon the theoretical framework of four stages of educational borrowing (Phillips & Ochs, 2003), the study illuminates the ASEHFA's political agenda underpinning the transfer of the Hampton model. The study also critically analyses why the boarding school system for the Ainu was not widely supported in Japan. The significance of this research lies in shedding light on how policy on indigenous education had structured in the globally interdependent political system.

# Title Page

## **1. Title of the submission**

The *In Silico* Model Project: Applying Computer Science in Medical Field

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## **6. Full paper**

The full paper is attached below from page 2.

# The *In Silico* Model Project: Applying Computer Science in Medical Field

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## *Abstract:*

This project aims at promoting the learning of Computer Science by applying computer technology into the medical field. Several undergraduate students from our Computer Science department are actively involved in a medical project that is designed to solve a real world problem. In this medical project, an *in silico* model will be built and delivered by combining human Magnetic Resonance Imaging (MRI) data and biological mechanics data that is suitable for input into a Dassault Systemes Abaqus Unified Finite Element Analysis (FEA) product. *In silico* modeling will be married to physical *in vitro* modeling using human medical images, animation equations, flow simulations, and biological data to produce kinetic and static FEA models and a polymer mimic of the human lower gastrointestinal region.

*Keyword:* in silico model, finite element analysis, human lower GI region

## **1. Introduction:**

A finite element model [1, 2] is an abstraction of a more complicated physical system. Such methods can be employed in anthropology and biology to study morphological variation in the skeleton related to function [3-9]. However, it is extremely challenging to abstract complex biological structures using finite element models, due to the highly irregular, complex geometric shapes of organic systems [10]. With the help of advanced biomedical imaging techniques, it is now possible to capture virtually any structure in 3D space. Image processing can then be applied to the image sequences to reconstruct detailed water-tight 3D surfaces to be used as a finite element template. The image processing includes organ segmentation, surface reconstruction, surface smoothing, and model simplification.

This project comprises two steps: (1) to build and deliver an *in silico* model by combining human MRI data and biological data that is suitable for input into a Dassault Systemes Abaqus Unified FEA product, and (2) to produce an *in vitro* physical model made of transparent polymer material that mimics human rectal and anal compliance. Data extracted from Human MRI slices will be reconstructed into 3D images using appropriate software by tracing/drawing appropriate tissue outlines in the digital data set. Biological elements included will be the colon below the sigmoido-rectal junction, the rectal vault, the valves of Houston, and the anal canal including the interior anal sphincter. The images will also contain an invasive fecal incontinence catheter within the rectal vault. Peristaltic and haustral wave forms will be integrated into MRI slice data to obtain and display the kinematic gastrointestinal tract below the sigmoido-rectal junction as an

active organ and kinetic FEA model. Both static and kinetic FEA model parameters must be able to be imported? into Dassault Systemes Abaqus Unified FEA product.

In the remainder of this paper, Section 2 introduces the methodology of this project, detailing step by step procedures for image segmentation, volume reconstruction, and surface meshing. Section 3 shows some of the results and comparisons based on MRI slices of the human lower GI tract. Section 4 concludes this project and discusses its relevance and significance for improving the teaching of Computer Science in higher education.

## 2. Methodology

In this section, we propose standard operating procedure guidelines on how to create a segmentation of human anatomical structures, specifically the lower gastrointestinal region, for the purpose of creating a 3D model. Software used to accomplish segmentation and file conversions are also introduced. Step-by-step instructions on how to segment the sigmoid colon, rectum, anal canal and internal anal sphincter will also be covered in detail. Also included in this section are strategies and techniques on how to create a representative volume from these segmentations. The segmented volumes can be loaded into other software such as SCIRun, Paraview and MeshLab. Detailed steps to successfully convert segmented data into a tetrahedral volume, then to a VTK file and finally to a STL file are also included.

### 2.1 Medical Image Segmentation

In the first step, students work with Magnetic Resonance Imaging (MRI) series data of the human lower GI region provided by our collaborating hospital. Several software tools are evaluated for segmenting the Regions of Interest(ROI) from the MRI images. The list of evaluated tools is shown in Table 1. Students evaluate the tools based on the following categories: the supporting input image formats; the project organization and navigation; the user interaction capability; the visualization of the image data in 3D space; and the supporting output formats.

Table 1. Software Tools for Medical Image Segmentation

Software Tool	Link	Free / Commercial
Seg3D [11]	<a href="http://www.sci.utah.edu/cibc-software/seg3d.html">http://www.sci.utah.edu/cibc-software/seg3d.html</a>	Free
3D Slicer [12]	<a href="http://www.slicer.org/">http://www.slicer.org/</a>	Free
ParaView [13]	<a href="http://www.paraview.org/">http://www.paraview.org/</a>	Free
ITK-SNAP [14]	<a href="http://www.itksnap.org/pmwiki/pmwiki.php">http://www.itksnap.org/pmwiki/pmwiki.php</a>	Free
Mimics 3-Matic	<a href="http://biomedical.materialise.com/3-matic">http://biomedical.materialise.com/3-matic</a>	Commercial

Based on our evaluation, the Mimics 3-Matic tool provides the best overall user interaction, visualization, and input/output support. However, since it is a commercial tool and requires a fee to use the full functionality, we decided to use Seg3D for this project, as it also provides good user interaction and functionality sufficient for our project needs.

### 2.1.1 Introduction to Seg3D

Seg3D organizes the image processing work as projects. Users can create a new project or open an existing project from the welcome page. Once the project is established, the main user interface (called workspace) is displayed, as shown in Figure 1. There are four sections to Seg3D's interface. There is a toolbar located on the top of the window. The left pane will contain the tools or filters that have been selected from the toolbar. Located in the middle of the workspace are the different view windows. The views Seg3D offers are Volume, Axial, Coronal and Sagittal. Finally, the right pane is the Layer Manager which contains the layer or mask layer sections.

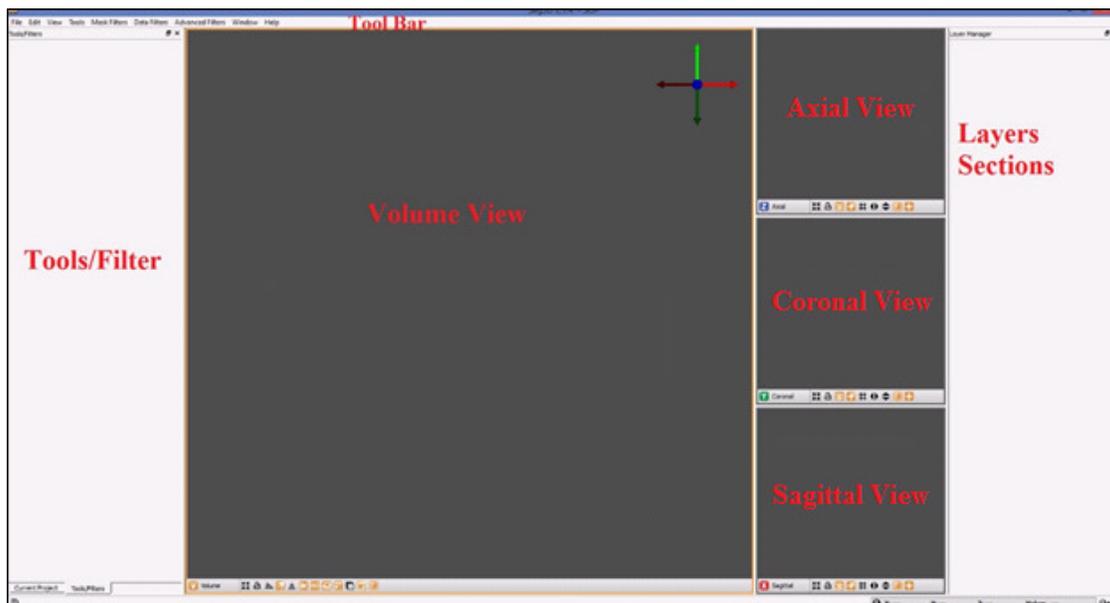


Figure 1. Seg3D Workspace

It is likely that a user will be working with a series of images within an MRI data set. Seg3D provides the option to load multiple images instead of a single image. Seg3D offers a set of “Keyboard Shortcuts” used together with mouse navigations. The list of shortcuts can easily be found from the toolbar under the Help menu.

Occasionally, the user will need to change views throughout the segmentation process as well as the size of the viewing window. The default workspace windows are known as the “One and Three” view. The benefits to this type of view are to see the 3D Volume and three different 2D views all at once in your workspace. Depending on the user's viewing preference, the user may change the number of viewing windows on the workspace to better accommodate their needs. The biggest advantage of having all four views on the workspace, is that the user can quickly identify their location when referring to a Cartesian coordinate system. This would be extremely helpful for first time users that are segmenting a stack of images. Also note, it is possible to see where a specific pixel or voxel is located on each of the views by their "picking" lines. Each

view has a corresponding color line. For example, the sagittal view's picking line is red, coronal is green, and axial is blue. As an example, refer to Figure 2.

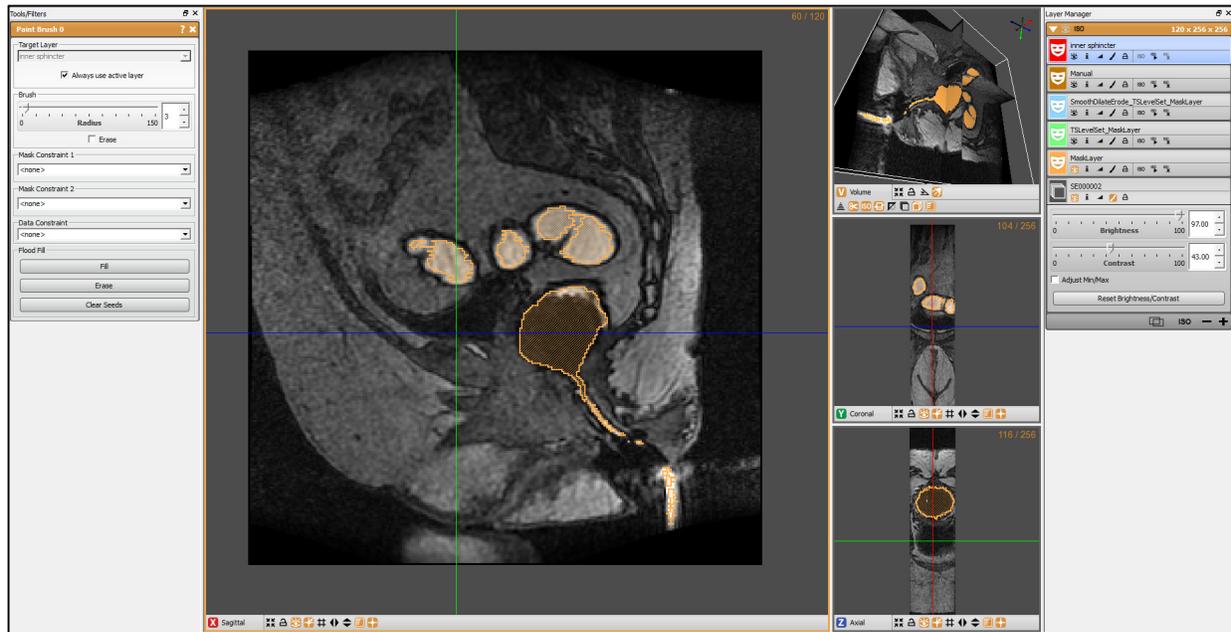


Figure 2. An example of picking lines

### 2.1.2 Segmenting the rectum

Figure 3 (Left) shows an anatomy overview of the sagittal view of an MRI slice. Parts of the colon have been saturated with a contrasting agent. The spine and tailbone are visible on the right side of the image. The rectum is also labeled and located near the middle of the image. In this specific picture, a catheter has been inserted into the rectum and a balloon has deformed the shape of the structure. A thin, white line that is passing through the anal canal is also labeled towards the bottom of the image. This is where the contrasting reagent is moving through the catheter's lumen within the anal canal.

Segmentation Level Set [15, 16] is the preferred method for segmenting MRI data sets of the lower GI tract. In order for the Segmentation Level Set tool to work, "seeds" will need to be added to the stack of images. In this case, we are referring to "seeds" as small, circular segmented pixels shown as colored regions in Figure 3 (Right). For best results, it's recommended to work in the sagittal view. Simply by selecting the Paint Brush tool and adjusting the circumference of the brush, a user can add seeds by "painting" them directly onto the image. For better results, additional seeds towards the first and last MRI slices have also been added. For the Level Set method to work properly, it is critical to select the right parameters. For the image shown in Figure 3, the Iterations parameter has been changed from 20 to 2000. The Curvature Weight and Propagation Weight parameters have been maximized to ten. The Threshold Range parameter is set to 3.50. The parameters for the Threshold Range and Iterations may need to be adjusted to avoid over-segmentation or under-segmentation.

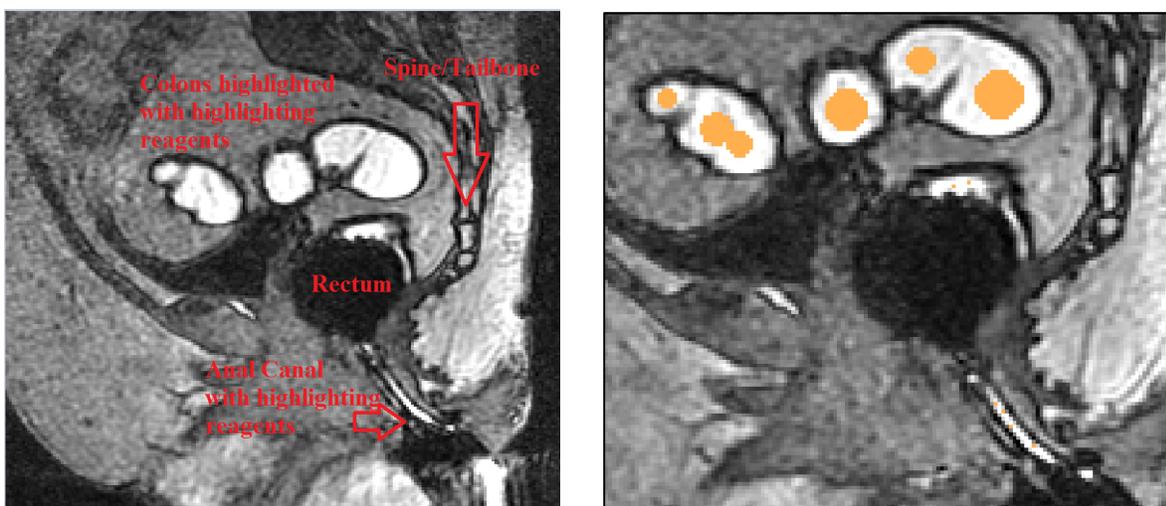


Figure 3. (Left) Anatomy overview in MRI slice; (Right) Adding seeds to Areas of Interest

After the MRI slices are segmented using Level Set, the user will need to traverse each slice to evaluate the segmented areas. After evaluating the segmented areas, the user can decide if additional segmentation is needed. One reason why additional segmentation may be needed is due to significant amounts of under-segmentation. In the case of small areas of over-segmentation, these segmented pixels can be easily removed using the Paint Brush tool. Some example segmentation results are shown in Figure 4.

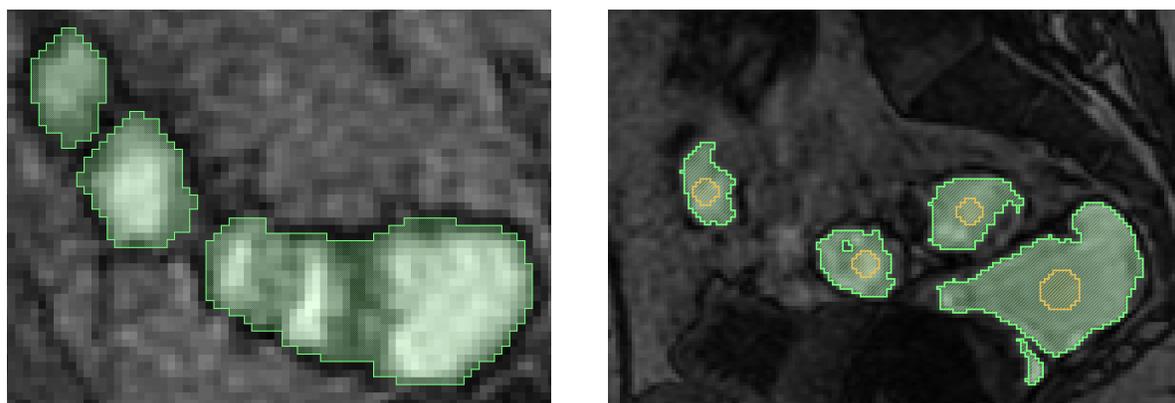


Figure 4. Examples of Segmentation using Level Set

Segmenting the rectum can be especially tricky. (Note: Segmentations are only as good as the MRI data that a user is given.) Figure 5 shows two examples from two different data sets. The outlined areas represent sagittal views of rectums on an MRI image. The first image is a little more complicated to segment because it has a contrasting, triangular shape located near the lower right side within the red outline. The triangular shape discrepancy in the rectum image is an air bubble where the catheter balloon did not fully fill the rectum wall. A technique to

segment data such as this would be to use the Segmentation Level Set tool for the rectum area to place seeds only in the very darkest areas. Do not place seeds on the triangular air bubble. The purpose of this method is to get an idea of the shape of the rectum. At this point, the user will have to manually segment the rectum either by using Paint Brush or the Polyline tool to cover the under-segmented areas.

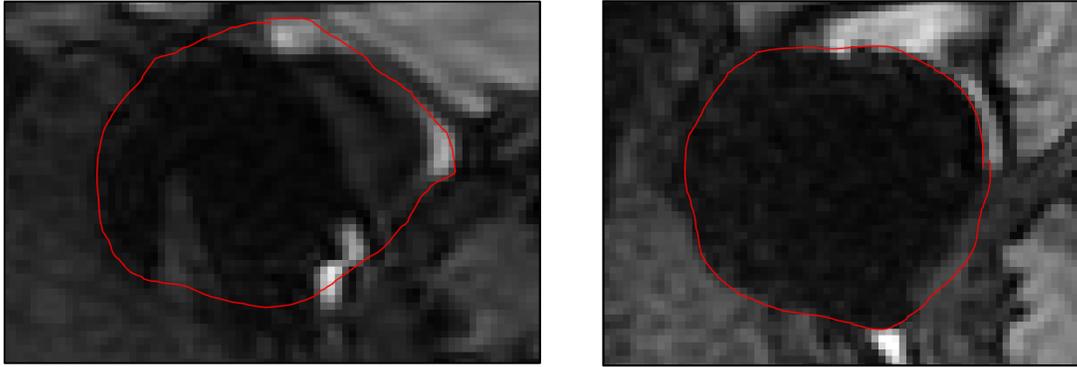


Figure 5. Examples of rectum Images

Isosurfaces can be created at any time during the segmentation process. An isosurface is a three-dimensional analog of an isoline. It is a surface that represents points of a constant value within a volume of space. If multiple layers were created, an isosurface can be created for each layer. It is recommended to rebuild the isosurface after making changes to the segmented data. The isosurface will appear in the Volume view. Further touch-ups can be done to make efforts of quantifying the data with the Dilate and Erode tool. The idea is to grow the segmentations by a certain radius and then decay it by a radius. The volume should even out after running both tools. A setting of 1 for both dilate and erode is the default. The user may need to adjust this setting to meet their needs. Due to the nature of the incomplete isosurface, a setting of 3 has been used. If the Smooth Binary Dilate and Erode tool does not provide data to the user's satisfaction, the user will have to smooth the segmented areas manually through the Sagittal, Coronal and Axial views. It's a good idea to keep in mind the anatomical shape of the areas that are being segmented. In this situation, the colon and rectum areas have a round shape. The user will need to traverse every slice of the Sagittal, Axial, and Coronal views to ensure the segmented areas are not over or under-segmented by adding or removing pixels from the ROI.

### 2.1.3 Segmenting the sphincter

The next step is to segment the internal sphincter. The internal sphincter is basically a ring-shaped muscle that surrounds the anal canal close to the rectum. In order to segment the sphincter, it is best to switch to the axial view. It is suggested to use the Paint Brush or the Polyline tool to segment this area. Figure 6 shows the segmentation results with and without the internal sphincter.

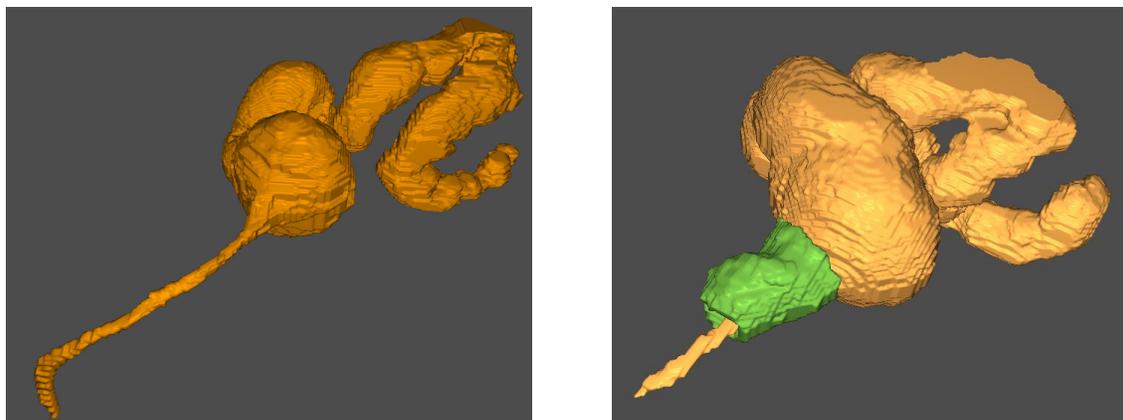


Figure 6. Isosurfaces of the segmentations (Left) without sphincter; (Right) with sphincter.

#### 2.1.4 *Exporting the segmentations*

Once the segmentation is completed, the resulting data may be exported as a NRRD file. NRRD ("nearly raw raster data") is a library and file format designed to support scientific visualization and image processing involving N-dimensional raster data. To save the segmentation as a NRRD file, the standard way is to click "File" in the toolbar and select "Export Segmentation". A Segmentation Export wizard pop-up box will appear. Only one layer should be exported. Deselect all boxes except for the desired layer. Click "Next" and name your NRRD file.

## 2.2 Model Surface Reconstruction and Meshing

In the second step, students use proper software tools to produce an in vitro physical model made of transparent polymer material that mimics human rectal and anal compliance. This step involves several operations, including building geometry, converting file format, surface smoothing and simplification, and model optimization.

### 2.2.1 *Building geometry*

SCIRun (v4.6) is used to convert a NRRD file into a tetrahedral volume. Eventually, the tetrahedral volume will be saved into a Visual Toolkit file. Python (v2.7.4) is used as the run time environment to create a tetrahedral volume from a NRRD file with SCIRun. The students generate python scripts with certain parameters to create the volume. An example python script is shown in Figure 7. There are two fields which will need to be filled out manually. These are the `model_input_file` and the `model_output_path`. For these two parameters, specify the file name of the segmentation and the name of the output folder where the user will want to save the results.

```

model_input_file=".nrrd"
# this directory must exist...
model_output_path=""
# -1 means all the rest of the materials combined
mats = (0, 1)
mat_names = ('air', 'mat1')
mat_radii = 1.0

#Number of refinement levels when generating the medial axis
points.
#More levels are needed to capture smaller details.
refinement_levels=4
max_procs=3
max_sizing_field = 3.0

num_particle_iters=500
# tetgen flags to use when making a volume from a single
# material
tetgen_joined_vol_flags = "zpAAqa10"

```

Figure 7. An example python script to build the geometry

Once the tetrahedral volume is created, the geometry mesh can be generated using the python scripts. As a warning, this process will take up CPU power and the computer may slow considerable if performing other tasks. The duration of this process may vary between one to four hours depending on the speed of the computer and the complexity of the geometry.

### 2.2.2 *Converting file formats*

After the meshing process has successfully completed, the output mesh files should be converted to STL format using SCIRun and ParaView. STL ( Standard Tessellation Language) is a file format native to the stereolithography CAD software, and used for rapid prototyping and computer-aided manufacturing [17]. In order to complete this task, two modules need to be loaded and linked in SCIRun. They are the "ReadField" and "WriteField" modules. Using these two modules, the mesh file can be converted to VTK format. VTK ( Visualization Toolkit) provides a number of source and writer objects to read and write popular data file formats. It also provides some of its own file formats. The main reason for using this format is to offer a consistent data representation scheme for a variety of dataset types, and to provide a simple method to communicate data between software. When dealing with medical images, it is always a good idea to use the most widely used format.

Once the VTK file is created, ParaView can be used to convert it to STL format. The conversion is straightforward using this tool. Alternatively, 3D Slicer can be used to convert VTK to STL. However, we find it is relatively more difficult to use 3D slicer to do the format conversion.

### 2.2.3 *Surface smoothing and simplification*

The last stage is to smooth the mesh. The software tool we used in this project is called MeshLab. MeshLab offers a few options to allow for mesh smoothing. In order to do this, navigate to the "Filters" option located on the toolbar and click the "Smoothing, Fairing and

Deformation" option. Within this sub-menu there are two options that work the best to smooth STL files: HC Laplacian Smooth and Taubin Smooth. Figure 8 shows the raw mesh and the smoothed mesh.

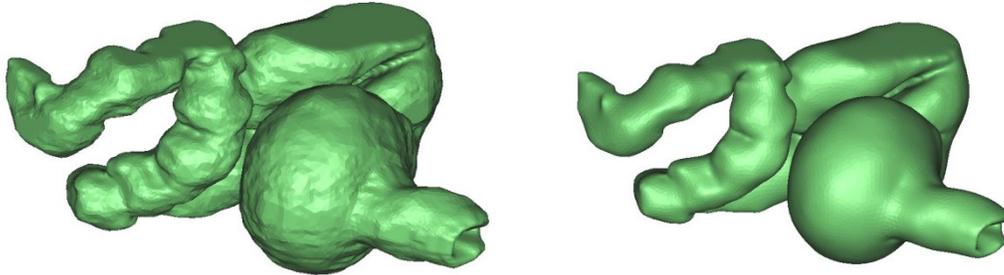


Figure 8. Comparison between raw mesh (Left) with the smoothed mesh (Right)

#### 2.2.4 Model Optimization

As an optional stage, we also utilize the commercial software tool, Mimics 3-Matic, to optimize the model such that it is more suitable to export to a Finite Element Analysis (FEA) product for use in software such as the Dassault Systemes Abaqus. The optimization includes scaling and registration of the anatomical data, reconstructing anatomy outside of original scan field of view (FOV), and remeshing. Some of the results are shown in Section 3 Experimental Results.

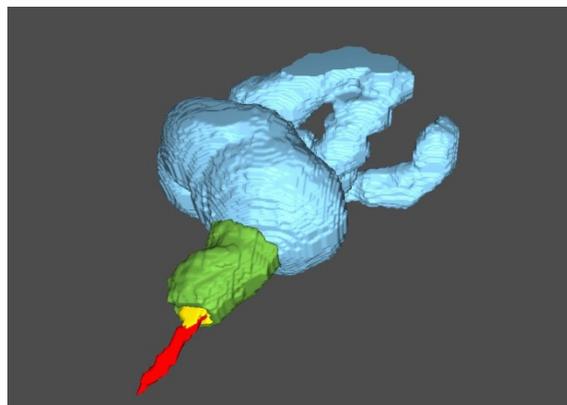


Figure 9. A completed color coded segmentation result

### 3. Experimental results

We include in this section some segmentation and meshing results based on sample MRI slices of the human lower GI tract. Figure 9 shows the completed color coded segmentation results with blue colon regions, green sphincter, and red lumen. This type of volume rendering has its limitations. Note due to the lack of information from the MRI images, parts of the anatomy have been truncated and thus we are given an incomplete and unnatural view of the

anatomical structure. Also, this type of model is purely for diagnostic purposes and cannot be used for any type of engineering analysis. For this reason, we need to convert or “mesh” this model into a calculated surface model also known as a tetrahedral surface mesh.

Figure 10 compares two meshed surface models, before and after smoothing. In each view, the upper left image shows the segmentation result; the upper right one shows the enlarged partial result; the lower left one shows the triangular surface mesh; the lower right one shows the enlarged partial mesh. Note the surface looks uneven and rough without smoothing. In the enlarged view, notice how the geometry contains sharp triangular edges. Our objective is to generate a smooth uniform surface of equilateral triangles as shown in the right set of images. Smoothing can be done in either MeshLab or in Mimics.

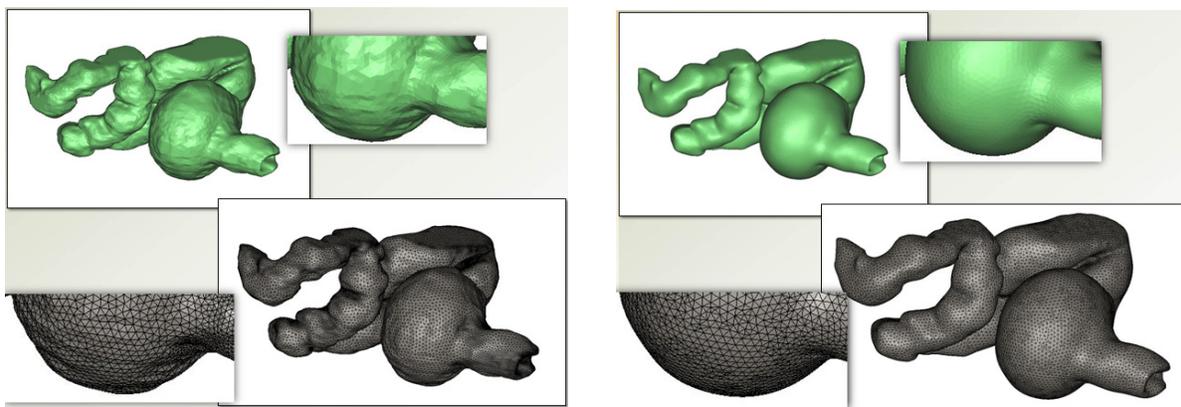


Figure 10. Comparison of meshed surface models (Left)without smoothing, and (Right)with smoothing

Figure 11 shows the results of reconstructing sections of the 3D volume to compensate the truncated surface areas due to the lack of data from the original MRI scan.

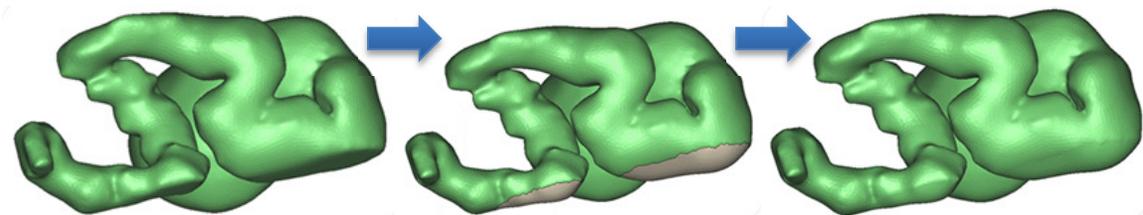


Figure 11. Result of reconstructing the truncated surface areas. (Left) mesh with truncated surface areas; (Middle) calculated missing data taken from the surrounding curvature; (Right) mesh after adding the calculated surface to the original structure.

After we have added the missing surface areas, we may need to remesh the volume so that the entire surface is uniform and smooth. Figure 12 (Right) shows the results of remeshing and exporting, compared with the one without remeshing. As you can see from Figure 12 (Left), the connections between the original and added areas have been somewhat roughly merged together.

In these images, after some additional smoothing and remeshing, the surface of our model has been smoothed and the triangular surface is clean and uniform and ready to be exported to either an engineering or manufacturing software environment. The next step with these models would be to export the digital 3D models into Computer-aided Design or CAD software which can execute computer simulated analysis to improve medical device design. With FEA software tools such as Abaqus, engineers are able to select areas of interest and load conditions such as stress to the lining of the rectum.

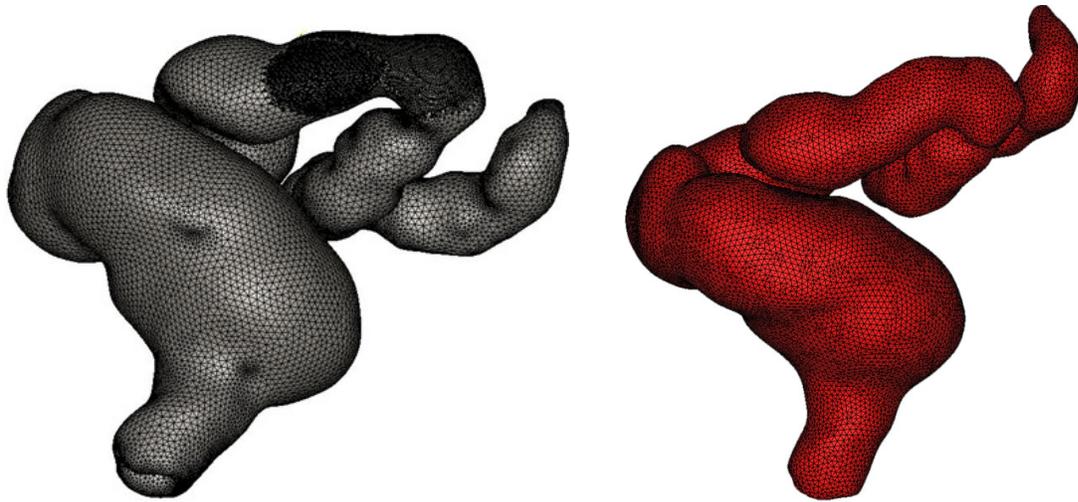


Figure 12. Comparison of mesh and remesh. (Left) mesh after surface reconstruction; (Right) remesh

#### 4. Conclusion

In this project, several students from our Department of Computer Science are actively involved to build and to deliver an *in silico* model of the human lower GI region by combining human MRI data and biological data. We propose the standard operating procedure guidelines on how to create a segmentation of human anatomical structures. Software used to accomplish segmentation and file conversions are also introduced. Step-by-step instructions on how to segment the sigmoid colon, rectum, anal canal, and internal sphincter are covered in detail. Also included in this paper are strategies and techniques on how to create a surface model from these segmentations that can be exported to manufacturing software for 3D printing or engineering software for finite element analysis.

This project not only helps faculty members stay at the forefront of their areas in order to teach successfully in the field of Computer Science, but also significantly improves student learning experiences by investigating how computer techniques can be applied to solve useful medical problems. In addition, we believe that the Computer Science curriculum extends beyond the subjects covered in a textbook, and this project introduces new topics into mainstream coursework, such as image and video processing, visualization and graphical design, and software development in medical imaging. Student participation in a project of this kind greatly enhances the impact of the Computer Science curriculum.

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Analysis of Online Community for a Project in the Foreign Country

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A new music project was started in Indonesia by using a business format of a famous music project in Japan. Continuously, an online fans' community in Japan was emerged, and this community had possibility to be influenced from both an original project community in Japan and a music scene community in Indonesia. In this study, the social graph and behaviorgraphics were used to analyze communication characteristics of a new community in Japan.

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# Analysis of Online Community for a Project in the Foreign Country

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## Abstract

A new music project JKT48 was started in Indonesia by using a business format of a famous music project AKB48 in Japan. Continuously, an online fans' community in Japan was emerged, and this community had possibility to be influenced from both an original project community in Japan and a music scene community in Indonesia. In this study, the social graph and behaviorgraphics were used to analyze communication characteristics of a new community in Japan. Gathered data were introduced to NodeXL software for analysis and visualization.

As results, the author could confirm that no bridge influencer became a hub in the online community. However, bridge influencers provided important information that most members did not know, and estimated to compose weak-ties to other communities.

## 1. Introduction

The globalization and internationalization are broadly deployed. At this moment, we can feel that the world is going to be flat (Freidman, 2005) in economical transactions, information communication and cultural exchanges.

In particular, the influence of Web2.0 reaches a stage in post-industrial societies where ICT is sufficiently powerful and low cost to be used by people. The integration of pervasive technologies with changes processed the ways how we communicate and interact with information. Also, the ability of people to organize online communities was developed. And, the social relationships have been altered by online communication in terms of scale and size.

The study in this article tried to investigate the effects of exportation of socio-cultural project, especially the study focused on effects in an original country, and how and what public opinions are formed through international information exchanges. Also, it needs to clarify that a new mode of collective intelligence has occurred in the prevalence of new forms of communication and the ways how people use to develop and distribute knowledge.

So far, we have limited cases to export our cultural or educational system to foreign countries. Moreover, we have no successful case to export our educational system before. From a limited number of our experiences of a project in overseas, the author selected a project of music business that could get great success.

## 2. Internationalization and an Emerged Community

The JKT48 (see Figure 1), an idol group that is active in Indonesian music business, debuted in November 2011 by applying a business format of AKB48 in Japan.

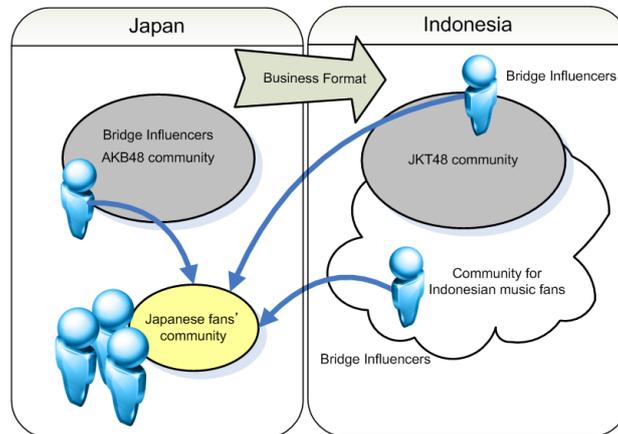


Figure 1: Idol Group, JKT48

Immediately after the announcement of launching the JKT48 project on 11th September, 2011, some Japanese fans began to search information of JKT48 and started to exchange messages collaboratively via a Japanese BBS; 2-channel, the largest BBS in the world. This 2-channel offers various thread floating bulletin boards, about 230 million page views per day, about 2 million of message posts per day, and frequently became the source to develop public opinions in Japan. In reality, more active message exchanges are seen in 2-channel than message exchanges in Twitter or Facebook, because it has a titled thread that is adaptable for deep discussion.

### 3. Communication

Rise of online fans' community of JKT48 was emerged as a thread of 2-channel in September of 2011. Besides, various online communities were formed around the project in addition to the Japanese fans' community in Japanese BBS. Therefore, this community had possibility to be affected by an original AKB48 community in Japan, a JKT48 community in Indonesia and/or an Indonesian music fans' community (see details in Figure 2).



**Figure 2: Situation of an Emerged Online Community**

Then, this investigational study challenged to know communication characteristics in which people formed collaborative opinions. In fact, target community was a newly developed online community, but it was not cold-start at all. It was possible to make ties with existing communities.

On the other hand, this study tried to know influences to a domestic community where exportation of cultural or educational system was viewed not only negatively, but also we have a tendency to be denounced.

As a method of investigation, the social graph and behaviorgraphics were used to analyze characteristics of the community.

### 4. Method

The author adapted a method of social network analysis as a way to investigate the online community by tracing messages. In particular, author selected earliest record of September, 2011, genesis of the online community, just before selection of JKT48 members by audition. Communication in BBS was processed under the lack of information. As usual cases of social graph study, ties are used for analysis. However, in this study, we processed the social research by searching bridge influencers as well. In this case, potentially three types of bridge influencers are able to effect on the community. That is,

- 1) A fan of preceding AKB48 who knows various system and experiences of this business format
  - 2) A fan of JKT48 in Indonesia who has more chances to access original information of JKT48
  - 3) A fans of Indonesian music community who knows music scene of Indonesia and can value JKT48 by comparison.
- (See conceptual view on Figure 2)

In this study, the author tried to know the quality of communication, and used social technographs method.

To identify the quality of communication, the author classified messages by using 14 types of behaviorgraphics developed by Brian Solis below (Solis, 2010).

1. Problem Solvers – One of the most common sources of conversations and updates in social media are questions...people seeking information in the hopes that commenters will respond with resolution or direction.
2. Commenters – Providing thoughts, opinions, observations, experiences, and sometimes, unfiltered reactions to the information shared online. They are less likely to produce original content, but are compelled to share their views based on the introduction of content by others in and around their social graph.
3. Researchers – Peer to peer influence is prominent in social networks and researchers rely on their social graphs for information and direction to make qualified decisions. They are also active in championing polls and surveys to truly learn about the thoughts and opinions of those connected to them.

4. Conversationalists – Participation in conversations through proactive updates seeking responses or direct responses to other content, conversationalists fuel threads within and across networks.
5. Curators – In the context of behaviorgraphics, curators carry a different role. This group works diligently to find and only share what captivates them as filtered by what they believe will interest their followers.
6. Producers – Among the more elite group of online participants, their stature is earned by the amount of content they generate within multiple networks.
7. Broadcasters – Social media is proving to be both an effective broadcast and conversational platform. Broadcasters are mostly one-way communicators who either intentionally or unintentionally push information to followers without injecting conversational aspects into the mix.
8. Marketers – Profiles dedicated to marketing ideas, products, or services and may or may not include content outside of their portfolio, unless the account is focused on funneling beneficial and value-added solutions to specific audiences regardless of origin.
9. Socialites – Individuals who have earned varying levels of weblebrity, these new internet famous personae earn recognition and attention in online networks which is increasingly spilling over in real world fame.
10. Self-promoters – Unlike broadcasters and marketers, self-promoters are unconcealed in their intentions through constant updating of activities, events, and accomplishments.
11. Egocasters – Contribute to the “ego” in the egosystem and represent the evolution of self-promoters. Through constant promotion and the activities and responses that ensue, promoters graduate to a position of perceived prominence and collective unawareness. What they think and say is what they believe to be the reality for one and for all. They lose touch with perspective as listening gives way to telling...
12. Social Climbers – Social capital is not only something that is earned in social networking, it is something that is proactively pursued by those whose sole mission is to rise to the top. These individuals intentionally climb ladders on the avatars, profiles, and social capital of others most often misrepresenting their purpose and stature to earn an audience based on disingenuous intentions.
13. TMI – The things some share in social media continue to blur the line between what’s relegated to inner monologue versus that for sharing with others in public. The state of sharing “Too much information” is dictated by those on the receiving end of the update, not those who publish it.
14. Complainers – When we love something, we tell a few people; when something bothers us, we tell everyone. Complainers are often sharing their discontent as a primary ingredient in their social stream. And, as customer service takes to the social web, these complainers are only encouraged to share their experiences to achieve satisfaction and earn recognition for their role as the new social customer.

Originally, Solis proposed 17 categories, but author excluded three incompatible categories in 2-channel online environment and selected 14 categories. For visualization of the social graph, the author introduced data into NodeXL, an extendible toolkit for community exploration implements an add-in to the Microsoft Excel 2010.

Note: The author did not post any message to the target thread of 2-channel.

## 5. Results

From the record, totally 513 posted messages were selected and the author could extracted 197 communications that have links to other messages. The following data are Graph Metric and Value (Table 1).

**Table 1: Network Data Statistics**

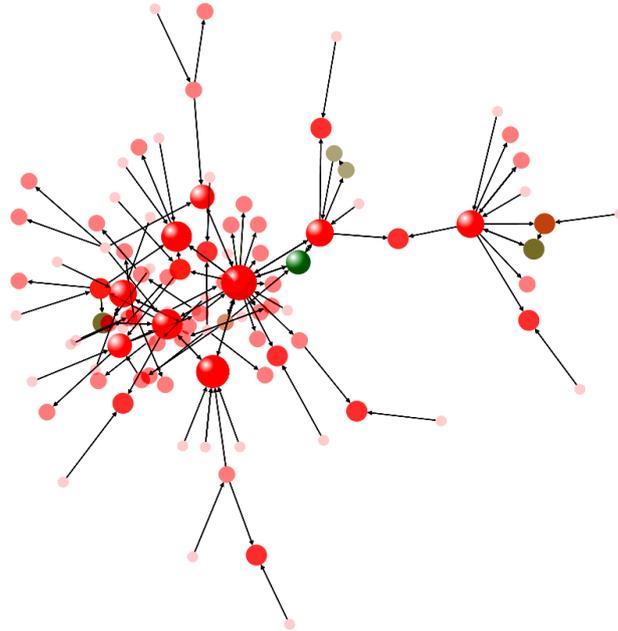
<b>Graph Metric</b>	<b>Value</b>
Vertices	102
Unique Edges	101
Graph Density	0.011
Diameter	9

From the graph (see Figure 3), it was evident that the larger core nodes with high degree, had relatively lower clustering coefficients because online users connected with many people who were not themselves connected to one another. Thus, nodes with high clustering coefficients would typically connect to fewer people since small groups are more able to connect every user to one another.

As a whole, the number of high clustering coefficient of green circles in Figure 3 is very small. However, two hubs are seen.

In Figure 4, nodes are sorted by decreasing clustering coefficient. These sub-graph images illustrate how the similar

clustering coefficient can refer to different local communication sizes.



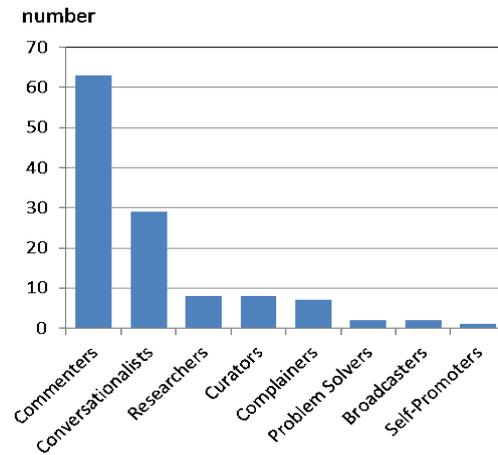
**Figure 3: NodeXL graph with node size proportional to node in-degree statistics and node color mapped to the value of the clustering coefficient: low values are indicated in red, high value indicated by shades of green (Harel-Koren Fast Multiplex Algorithm).**

Many of the clusters are visually grouped together by the Harel-Koren fast multiplex layout (Harel & Koren, 2001, 2002).

Betweenness Centrality	Closeness Centrality	Eigenvector Centrality	Clustering Coefficient	Subgraph
36.000	0.005	0.039	0.667	
0.000	0.004	0.014	0.500	
0.000	0.004	0.010	0.500	
0.000	0.004	0.010	0.500	
0.000	0.003	0.001	0.500	
89.500	0.005	0.034	0.333	
132.000	0.003	0.001	0.333	
291.333	0.004	0.023	0.100	
233.500	0.005	0.039	0.083	
928.167	0.005	0.050	0.071	
1836.000	0.005	0.040	0.071	
518.333	0.005	0.041	0.033	
870.000	0.005	0.040	0.033	
3333.833	0.007	0.120	0.016	
1222.000	0.004	0.003	0.014	

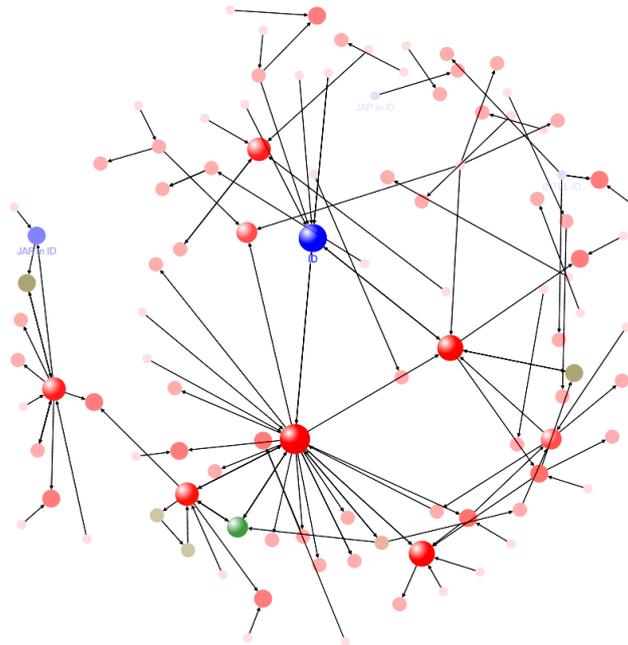
**Figure 4: NodeXL Vertex worksheet showing the list of nodes (online users), with sub-graph images indicating the node networks (personal communication networks) and selected related metrics.**

Through analysis of the genesis of the online community, totally 8 types of behaviorgraphics were observed (see details in Figure 5). Observed type numbers from links looked to fall into the scale-free networks. Types have power-law degree distributions, but data size is rather small and it should have further continuous monitoring and analysis to conclude it.



**Figure 5: Emerged Types of Behaviorgraphics**

Figure 6 shows a graph with bridge influencer of blue circles, and it can be find that ID: a local Indonesian connected with a hub. Other blue circles of Japanese (in Indonesia or Intel of Indonesia) were rather isolated.



**Figure 6: NodeXL graph with node color of bridge influencers mapped to blue (Fruchterman-Reingold Algorithm: Fruchterman & Reingold, 1991).**

This Fruchterman-Reingold layout is a force-directed layout algorithm, which treats edges like springs that move vertices closer or further from each other in an attempt to find an equilibrium that minimizes the “energy” of the system (Hansen, Shneiderman, & Smith, 2010; Harel & Koren, 2002).

## 6. Discussion

The sparse links were observed during genesis of the online community.

There were two hubs in the community, but these clustering coefficients were rather low.

### 6.1. Bridge Influencers

#### 1) An Indonesian local fan

Type of behaviorgraphics	number
Commenters	2
Complainers	2
Conversationalist	5

This member was not a hub, but had communication with a hub. On the other side, this member was disrespected two times. This shows that there is certain mental resistance at genesis. Also, an Indonesian local fan frequently provided important information from Indonesia to members and recognized as to make weak ties to Indonesian communities.

#### 2) Japanese in Indonesia & Japanese Intel of Indonesia

Type of behaviorgraphics	number
Commenters	3
Conversationalist	1
Curators	2
Researchers	1
Self-promoters	1

They are some Japanese, and they know Indonesia or live in Indonesia. Their activities are mainly offer information that Japanese should know, however limited action was seen to communicate with a hub. Nevertheless, offered information was indispensable for most members and recognized to compose weak ties to other communities.

#### 3) Fans of AKB48

It was difficult to identify the bridge influencers from AKB48 community, because many of community members had experience to be fans of AKB48, and frequently implied information of AKB48 project to recognize JKT48 or compared with AKB48 to value quality of performance. Their messages composed strong ties to AKB48 community.

### 6.2. Cold-Start Problem

The genesis of online community frequently encounters the cold-start problem. At the beginning of JKT48 project, there were frequent announcements of this project plan in broadcasting media and Internet. Then, an emerged online community involve people who had interested in Japanese sub-culture activities in a foreign country. However, the JKT48 project used existing business format in Japan, and so this community had many members from AKB48 fans as well.

In fact, some of AKB48 fans complained about the project of JKT48 in terms of quality and cultural differences.

On the other side, it looked easy to happen cyber cascade under limited information environment (Sunstein, 2001), but members were frequently asked and confirmed original resource of information and share opinions by using type of 'commenters' and 'conversationalist.'

### 6.3. As Fundamental Data of Internationalization

So far school education in Japan has been developed more than 1,300 years but it is still domestic diffusion. However, the recent Ministerial project intends to enlarge an externality of international education by provision of our education in overseas. It is deemed effective for the Ministry and Universities to focus resource investment in those with high potential to serve as hubs for internationalization (Ministry of Education Culture Sports Science and Technology, 2013).

So far most Japanese Universities have limited experience to deploy domestic education in foreign counties, but we has some cases to deploy Japanese culture or sub-cultural in foreign countries. Then, this study implies effects of domestic understandings to internationalization by analyzing a preceding cultural example as a model. Especially of communication, the author intended to find the effects of existing communities to the emerging online community.

In fact, Japanese sub-cultural community is becoming pervasive faster than educational community, and it would suggest more by processing continuous analysis that enable us to lead more understanding of communication about

the collective intelligence for internationalization.

#### 6.4. Future Study

At this moment (September, 2013), this community has variegated and produced eight active thread floating bulletin boards of sub-community. JKT48 became No.1 idol group in Indonesia, their song was ranked number one in the Indonesian song chart on 2nd September, 2013(Rajawali Citra Televisi Indonesia, 2013) and also Japanese fans increased. In our subjective recognition, positive messages of JKT48 project increased than messages with disrespect. Unfortunately, 2-channel does not offer available API for social graph analysis and users frequently omit hyperlinks when they answer, but it is possible to analyze by tracing messages.

In our attempting analysis of recent online communication data, the author could observe active bridge influencers and also important weak ties. Then, time series analysis and effects of change on formulate public opinions should be conducted.

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**Title of the submission:** A Review of Research on the Relationship between Theory of Mind and Executive Function in Korean children.

**Topic area of the submission:** Educational Psychology

**Presentation format:** Poster Session

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**Abstract**

The purpose of the present study is to review literatures on the relationship between theory of mind and executive function of Korean children. For the literature reviews, ten articles on this topic were selected and used. Results showed inconsistent relationship between theory of mind and executive function. Implications for future research of theory of mind and executive function were suggested.

**A Review of Research on the Relationship between Theory of Mind and Executive  
Function in Korean children**

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Children's theory of mind (ToM) has become an important research topic in the field of child development. ToM is the ability to understand the mental states (e.g., desires, beliefs, feelings, and intentions) of oneself and other people (Perner & Lang, 1999). Many previous studies have reported the significant relationship between ToM and executive function in children, but their findings were not consistent especially in research using Korean population. The purpose of the present study is to review literatures on the relationship between ToM and executive function of Korean children.

For the literature reviews, ten articles on this topic were selected and used. All of the 10 articles included Korean children and adolescents, and the journal of these articles were indexed in the Korean Citation Index(KCI) between 2004 and 2013. Results showed that seven out of the ten articles reported a significant correlation between ToM and executive function, while the remaining three reported no significant correlation. About scales to measure ToM, seven articles used a false belief task. Three out of the ten articles used the appearance-reality task (e.g., "Smarties box"). In addition, inhibitory control tasks (e.g., "Day/Night", "Sheep/Lion (Bear/Dragon)", "Card Sort") and delay of gratification tasks

("Gift Delay") were used to evaluate the executive function of Korean children.

Implications for future research of theory of mind and executive function were suggested.

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# The Exploration of Strategy to Develop Serious Game for Science Learning

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## Introduction

Even elementary school students have many difficulties in science learning. Lots of students in elementary school are in trouble with understanding abstract science concepts as they are in concrete operational stage, according to Piaget's cognitive develop theory (Johnstone, 1994). So they are not prepared to think formally (Piaget, 1964). They do not familiar with science inquiry either (Shin, 2010). To make it worse, they are not interested in science learning. Higher grade they grow up into, less interests they have got (Kwak et al., 2006).

There have been many suggestions to help students learn science easily and properly through previous studies. Some emphasize the motivation, while others focus on learning strategy to make it easy understanding the difficult science conception. Serious game is one of the suggestions to help students have motivation as well as understand the science conceptions. The effectiveness of serious game for science learning has been proven.

The strongest attraction of serious game is lifting up the motivation. It is because that serious game originates from game which has lots of interests. Besides, as for the acquiring concepts, game can support the students who have various learning types - audible, visual, haptic. Students can understand the causal relationship between variables of natural phenomena with computer games' simulation function. They can observe huge events over geological era by fastening the passage of time.

In terms of motivation, game has strong attraction to induce students. Youths' addiction to game is a dangerous social problem in many countries. Well-designed serious games can make students absorbed in learning. However, it is very hard to design effective serious game. If we're not cautious in developing serious game, the result may be a boring learning program or ineffective playing tool.

So we need to explore the strategy to develop effective serious game for science learning. For the first step, we have explored the status quo of game addiction/flow through the interview. Interview as qualitative research method is a powerful way to explore someone's' life. The process of game addiction/flow will provide the solution of difficulties in science learning.

## Literature review

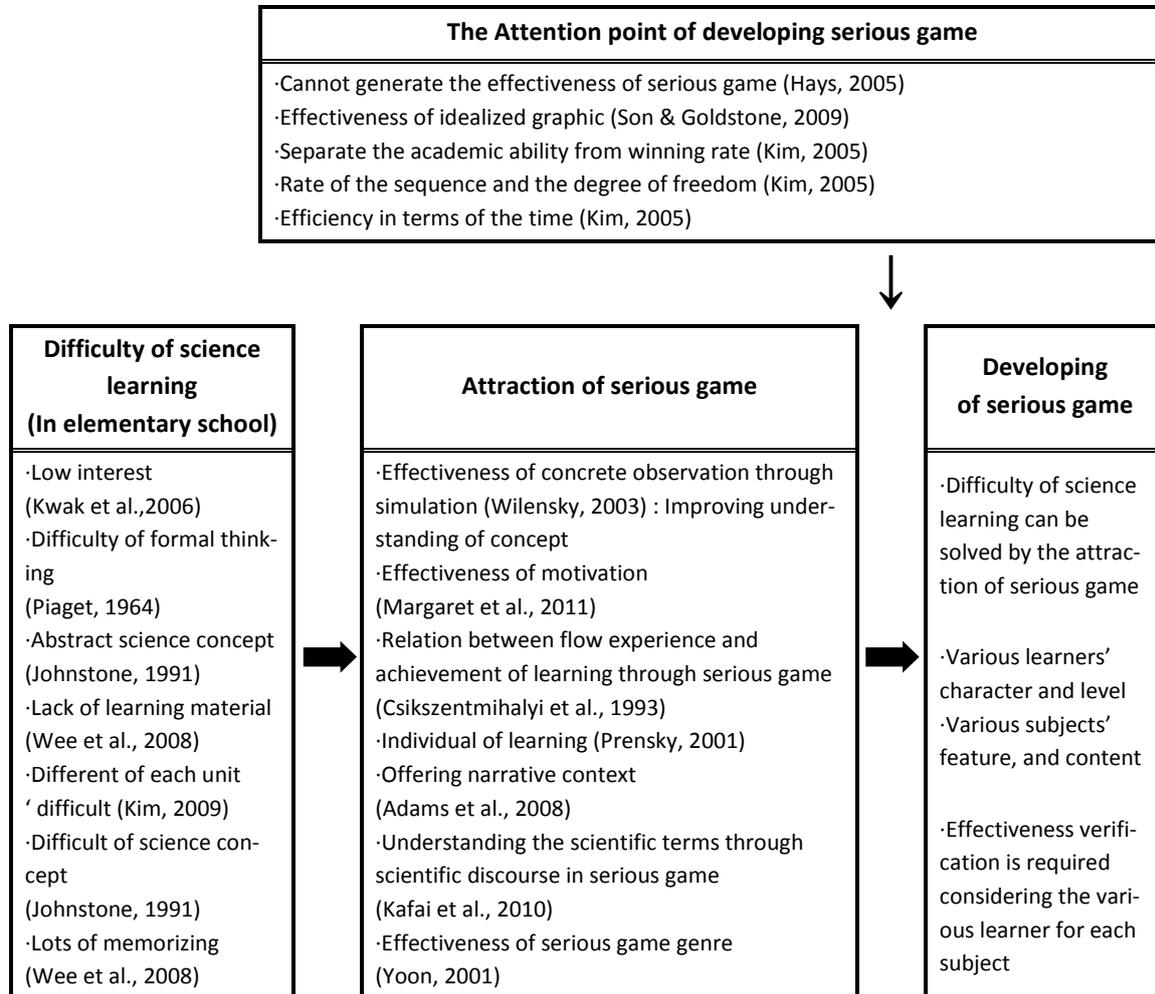


Figure 1. The Relation between the difficulty of science learning and the attraction of serious game

### 2.1. The Difficulties of Science Learning

#### 2.1.1. Student aspect

Student's attitude towards learning is the significant factor. But students' interest in science is less than the other subjects, and the higher grade, less interest in science (Kwak et al., 2006). They also think that their understanding ability is deficiency (Jeong, 2003). So it can be considered that they do not have sufficient confidence. In addition, they have a difficulty in thinking formally because they are in concrete development stage (Piaget, 1976). They also do not consider so many aspects at the same time (Johnstone, 1991).

### 2.1.2. Subjective aspect

The science concepts are not concrete but abstract (Kim, 2009; Johnstone, 1991). So the student who is in the concrete operational stage cannot help facing difficulty in learning science. To make it worse, scientific terms are difficult because these are not familiar with common life. (Johnstone, 1991; Kempa, 1991). There are many scientific terms which have a double meaning in common life and learning context. And there are not enough reality materials to learn either.

### 2.1.3. Curriculum Aspect

They have to memorize too many things to learn the science (Wee et al., 2008). Each science unit has each difficulty. In addition, students meet different difficulties according to the contents they are learning. For example, constellations are difficult for the students to learn as students have to memorize by rote. On the other hand, geological features give other difficulties in thinking long term era. Students cannot imagine the variation in huge scale for thousands of million years (Wee et al., 2008).

## 2.2. Attraction of Serious Game

The strongest attraction of serious game is motivation. So many researches show that serious game has the effectiveness of motivation (Beak, 2005; Clark et al., 2009; Margaret & Margaret, 2011; Kim, 2005; Seo & Park, 2010). Huizinga (1955) said that play is the origin of culture, human is homo ludens, playful instinct. So human find play element in learning (Kim, 2005).

Meanwhile, the effectiveness of observation in simulation has been proven by many previous studies (de Jong, 2009; Quellmalz et al., 2009; Wilensky, 2003). Through simulation, learners can see the concrete material instead of abstract concept. Serious game can provide the visual, audible, and haptic materials related to learning contents. This is possible due to the development of information technology. So learning can be approached by characteristic learning (Kim, 2005).

According to the constructivism, individualization of learning is one of the most important things. Serious game can provide the individualization learning situation (Margaret & Margaret, 2011; Prensky, 2001). So serious game can provide the various learning environments matching to the individual context, i.e. differentiated learning is possible by serious game (Plass et al., 2009).

Serious game has a narrative element (Adams et al., 2008). Narrative makes fun and interest in learning. Narrative can provide the flow experience. So it affects the motivation of learning. The flow experience in serious game is related to the achievement of learning (Csikszentmihalyi, M. & Larson, R., 1984, Csikszentmihalyi,

M. & Rathunde, K. Whalen, S., 1993). Besides, learner can understand the scientific terms easily through the discourse in serious game (Steinkuehler & Duncan, 2008; Kafai et al., 2010).

## Method

### 3.1. Proceeding of Research

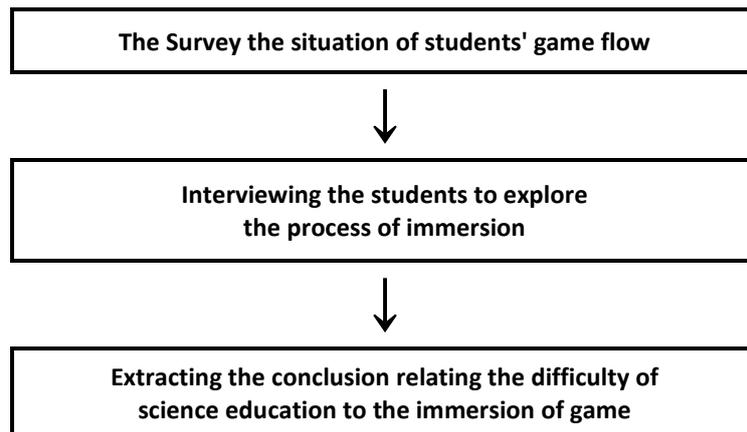


Figure 2. The Proceeding of the research

This study is designed in three steps. As a first step, we survey the situation of immersion in the game of elementary school student through questionnaire on the immersion in the game. Students are 6<sup>th</sup> grade in elementary school, in Seoul, Korea. As a second step, we interview some distinguished the students who are immersed in the computer game. Through interviews, we find out the process of immersion and the attractive important factors in the game. As a Last step, we extract the conclusion which concerns the relation of difficulties in learning science to the immersion factor in the game.

### 3.2. The Method of Exploring

#### 3.2.1 The questionnaire of measurement of game flow

The questionnaire developed by Chou & Ting (2003) was selected to measure the immersion in the game. We use the tool after translating the questionnaire in Korean. Chou & Ting (2003) has a point of view which the students who have experienced the flow are more likely to addict. The addiction constructs are Addiction (6 items) and Saliency (4 items). The flow constructs are Concentration (4 items), Playfulness (8 items), Distortion in time perception (3 items), Telepresence (5 items), and Exploratory behavior (8 items). The alpha value of sub-construct of Chou & Ting (2003) ' study is showed that ranged from 0.79 to 0.93, assuring the construct reliability. The alpha value of this study is Cronbach  $\alpha=0.91$ .

### 3.2.2. The method of selecting the interviewees and constructing the interview.

#### 3.2.2.1. Selecting the interviewees

The homeroom teacher can observe students in many dimensions; learning attitude, character, common life, level of learning achievement, etc. Especially, homeroom teacher can approach the student' diaries and class homepage. For this reason, we selected the students as the interviewees from the class where one of the researchers is in charge. The interviewees are selected from the questionnaire of the addiction/flow of the game, the diary, class homepage, and observation. Of course, the interviewer and the interviewees have a sensitive teacher - student relation. So the interviews were carried very carefully to reduce the effect of the relation problem.

Table 1. The basic information of Interviewees

Student	Grade	Age	The Addiction/Flow Score (five-point scale)	About Parents	note
Student A	6th	12	1.45	Only father	Feel lonely
Student B	6th	12	2.95	Father lives in other place because of working	Minecraft game
Student C	6th	12	2.68	Both parents show little concern.	Goes to PC room every day.

Student A writes postings in class homepage every day, accessed internet many times a day. His diary showed that he goes to PC room<sup>1</sup> many times a week. He also enjoys a talking to friends about the game. So we can presume him to be addicted to the game. For this reason, student A was selected as an interviewee.

Student B is not a student who is exposed about the game addiction. It is difficult to find a clue related with game through his diary and observation. However, through the survey about the game addiction, student B is exposed as a heavy gamer; he got the high score in the survey. Some description written in the survey showed that he plays the game about 2hours a day. It is not common that an elementary school student play the game 2hours a day. So student B was selected as an interviewee.

Student C is recognized by other students that he plays the game many hours a day. There are many reasons supporting the students' words. He writes it many times on his diary that he went to PC room with his friends. We can often hear him talking to the friends to go PC room after school. In addition, student C got a counsel

<sup>1</sup> PC room is the facility which place can play the game and/or work with computer. Many of Korean students go to PC room to play the game. It is the culture of Korean.

about his experience related PC room at last semester. He also got high score in the survey of game addiction. So student C was selected as an interviewee.

### 3.2.2.2 Construction of the interview

Seidman (1998) suggest a structure of deep interview as a qualitative research. So we constructed the interview structure suggested by him. The interview was composed of three steps. First interview was focused on the life history; how have you been addicted to the game? Second interview was focused on the reconstitution of detail experience; which factor do you consider attracts you in the game? Third interview was focused on the meaning of the game oneself; what is the meaning about playing game on your own viewpoint? Fourth interview was focused on the exploring the relation between the attractions of the game and learning science; what is your difficulty in learning science?

When we construct the interview structure, we consider that the interviewees are the elementary school student. So we limited the length of each interview not to exceed the 30 minutes. As elementary school students do not have enough concentration so long. We emphasized that they would not have any disadvantage due to the interview, it was because the students many concerned that interviewer was a homeroom teacher of these three students. The interviewer always checked the circumstance of the interview and especially attempts the students comfortable. The interviews were recorded and transcribed.

## Result

### 4.1. The Result of game addiction survey

Table 2 shows that the result of the survey of game addiction. The scores are based on 5 point Likert scale. Higher score means to be addicted more. The class students got the highest score in Distortion in time perception construct and the lowest score in Telepresence construct. Student A got the higher score than class average in only one construct. He is ranked 18<sup>th</sup> in the class while he spend more time playing the computer game than other student. Student B got the higher score than class average in all constructs. He is ranked 4<sup>th</sup> in the class. Student C got the higher score than class average in except two construct. He is ranked 6<sup>th</sup> in the class.

Table 2. The result of game addiction survey with five-scale

student code	gender	Addiction (10 items)				Flow (28 items)			In Five-scale	Rank In class (n=26)
		Addiction (6)	Salience (4)	Concentration (4)	Playfulness (8)	Distortion in time perception (3)	Telepresence (5)	Exploratory behavior (8)		
A	Boy	2.17	1.75	1.50	1.00	2.67	1.00	1.00	1.45	18
B	Boy	2.83	3.00	3.00	3.00	3.00	2.40	3.25	2.95	4
C	Boy	2.67	2.00	2.00	2.50	3.67	3.00	3.00	2.68	6
Class Average		2.07	2.01	2.69	2.00	2.95	1.34	1.86	2.04	

#### 4.2. The Result of interviewing the students who are immersed in the game

##### 4.2.1. The Process of Game flow

###### Student A

Student A plays the game just to kill the time. He does not have anything to do except going private educational institute 3 times a week. He spends 2~3 hours there at a time. He usually plays the game after school until eating dinner. But dinner time is not fixed because he always eats alone. His family members are four, which are grandfather, grandmother, father, and him. His mother died when he was 2~3 years old. His grandfather does not have any presence. His grandmother usually raise the grandson, him. However, she does not concern so much about his grandson. His father is yet young, spending the dinner time with his friends every day. So student A usually eats dinner alone. On the other words, he cannot derive comfort from his family. So he has no choice but to go to PC room with his friends. He says that he does not feel lonely because of his family, but he misses the comfort family in his inside. This situation makes him go PC room with his friends. And he kills much time rather than spend time playing the game.

###### Student B

Student B plays only one kind of game addictively. He is often immersed in the game. He believes that the game is very useful to develop creativity and helpful to learning English because the game require informal structure and made in English. His family has a permissive attitude toward playing the game. This atmosphere reinforces him play the game. His father lives other place because of the job. So he lives with his mother, his grandmother, and his brother. His mother works after dinner time, and his grandmother works evening to dawn. It is thought that parents' busyness has him play the game. So he plays the game enough everyday under lack of control from his parents or grandparents. In addition, his brother makes him be immersed in the

game. Playing the game alone is fun, while playing the game with his brother makes him more pleased. So he mostly plays the game with his brother every day. On the other hand, he does not have many friends. In the elementary school, he plays usually with only one friend. His friend plays the same game. If they want to play the game together, they have to go to the same Wi-Fi Zone. So he plays the game even after-school with the friend who plays with him in the school. It makes student B immersed in the game, too.

#### Student C

Student C enjoys playing the game. His parents have permissive education of children. So they allow him play the game, quit the private educational institute. Such parents' attitude to child education make the situation that student C can go to PC room. Student C doesn't participate in after-school lesson nor goes to the private teaching institute. He goes to PC room everyday to play many kinds of games with friend in the PC room every day. He wants to do well in many games. Actually, other friends of his said that he plays the game very well. Game is a tonic in his life. Finally, he wants to be a pro-gamer in the future.

Table 3. The comparison of game flow process of students

Students	Aim of playing the game	Background
Student A	Killing time	having too much time alone
Student B	Develop the creativity	Parents' permissive attitude
Student C	Just enjoying the game	Parents' permissive attitude

## 4.2. The strategy for serious game

### 4.2.1. Collective

Collective factor is an important element in the game. The three of student are playing the game with others. Student A and C said that they would not go to PC room alone. Student B also plays the game with his brother or friends. They have more fun when playing the game with others than playing the game alone. Besides in everyday life, many people also have more fun when playing together than playing alone. So collective factor should be considered when develop serious games. It is related with serious game can provide the interaction with others (Richards et al., 1992; Prensky, 2001).

### 4.2.2. Various

There are various learners in school. Each learner has difference interest and character in learning area. The three of student like different genre of games. Student A likes First-Person shooter game. Student B likes only Minecraft which makes structures. Student C likes many kinds of game. Each contents of learning have a suitable genre of game (Kang & Yoon, 2009; Kim, 2005; Yoon, 2001). And each genre of game has an appropriate type of thinking (Kang & Yoon, 2009; Yoon, 2001). For these reasons, serious game should be developed to satisfy individual learners' tastes.

#### 4.2.3. Online

Serious game which can be accessed on the internet is attractive to the students, who feel much free time. The student can play the game on the internet with others who don't know each other directly and play any-time. They would interact each other in online circumstance. The three of student A, B, and C play the game in online all the time. In addition, online factor is related with collective factor. It is necessary in play the game together having access the internet. So online factor should be considered when develop serious games.

#### 4.2.4. Narrative

In terms of constructivism, narrative situation is very important to learners. Learners can construct the knowledge with easy in narrative learning situation. The learner who has much free time like the student A, play the game in order to kill time. Such student can learn the knowledge with playing serious game which provides the repetitive and narrative learning situation.

## Conclusion

The students who are addicted the game have common characters. They have enough time to play the game. In other words, they have a little to do after-school until go to bed. Their parents or fosters have a permissive attitude to the students. Thus, a home environment effects to the student's process of game addiction. They play the game with their friends or brother, not alone. For this, we can extract the strategy of develop serious game. If serious game has collective, various, online, and narrative factors, the students can play the serious game easily. Such a process can make their learning naturally. Especially, serious game has strong attraction; they can help visual, audible, and haptic learners in studying science which is especially made up of many abstract and difficult concepts.

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**1. Title of the submission :**

The Heuristic Attention Model Based on Analysis of Eye Movement of Elementary School Students on Discrimination task

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**6. Abstract and/or full paper :**

The purpose of this study was to develop a HAM(Heuristic Attention Model) by analyzing the difference between eye movements according to science achievement of elementary school students on discrimination task. Science achievement was graded by the results of Korea national achievement test conducted in 2012, a random sampling of classes.

As an assessment tool to check discrimination task, two discrimination measure problems from TSPS (Test of Science Process Skill; developed in 1994) which were suitable for eye tracking system are adopted. The subjects of this study were 20 students from 6th grade who agreed to participate in the research. SMI was used to collect EMD(eye movement data). Experiment 3.2 and BeGaze 3.2 programs were used to plan experiment and analyze EMD.

As a result, eye movements of participants in discrimination task varied greatly in counts and duration of fixation, first fixation duration and dwell time according to students' science achievement and difficulty of the problems. By the analysis of EMD, strategies of the students' problem-solving could be found. During problem solving, subjects' eye movements were affected by visual attention; bottom-up attention, top-down attention and aflunter attention.

In conclusion, HAM was developed and it is believed to help development of science learning program for underachievers.

**Key words :** heuristic, attention, bottom-up, top-down, aflunter, underachievers

**Submission ID number: 1229**

**1. Title of the submission:**

Korean kindergarten teachers' emotional labor and its relations to job satisfaction and social support

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**6. Abstract:** attached in the following page

## **Korean kindergarten teachers' emotional labor and its relations to job satisfaction and social support**

This study examined the overall aspects of kindergarten teachers' emotional labor, the differences in it according to their personal and institutional variables, and the correlations of their emotional labor with job satisfaction and social support. Subjects consisted of 334 kindergarten teachers, working at public or private kindergartens in Seoul, Korea, and the data were collected through a questionnaire including Emotional Labor of Teaching Scale (Brown, 2011), Job Satisfaction Measurement Scale for Childcare Teachers (Lee, 2007), and Indirectly Perceived Social Support Scale (Park, 1985). The results of this study were as follows. First, the kindergarten teachers' perceived emotional labor level was slightly over the average in general, and among the sub-categories of emotional labor, deep acting was the highest and surface acting was the lowest. Second, according to the variables, significant differences were found only in their kindergarten types and working hours. Third, as a result of examining the correlations between sub-categories of emotional labor and job satisfaction, deep acting was positively correlated with job satisfaction, while surface acting was negatively correlated with job satisfaction. In terms of the correlations between sub-categories of emotional labor and social support, natural emotions and deep acting were positively correlated with social support, while surface acting was negatively correlated with social support.

**Submission ID number: 1230**

**1. Title of the submission:**

Lost in professionalism: Infant caregivers' confusion about professionalism and overcoming power

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**6. Abstract:** attached in the following page

## **Lost in professionalism:**

### **Infant caregivers' confusion about professionalism and overcoming power**

This qualitative study explored infant caregivers' confusion about professionalism in the process of implementing infant education and care (educare) in practice and their inner power of overcoming the confusion and difficulties and growing as a professional. For this purpose, 24 infant caregivers in Korea were invited to participate in this study, and data were collected through in-depth interviews and observations.

As the key factors that lead to confusion about professionalism, the infant caregivers highlighted (1) physically hard work, (2) inelegant teaching, (3) low expectation and pervasive undervaluation on infant caregivers, and (4) consequential self-perception of their job as non-professional. Nevertheless, the infant caregivers had the inner power of overcoming the confusion actively and constructively. To be concrete, first of all, they aroused a sense of responsibility as infant caregiver by themselves, who could make differences in infants' lives. Second, they made an utmost effort to regard their job as professional, realizing that caring and daily routines are very essential and professional parts of their work and doing their best to get professional knowledge. Third, through sharing emotions with infants and new discoveries about infants, they got great consolation and got to gain confidence as infant caregivers, expanding their understanding about infants and improving relationships with infants. Fourth, they came to form proper beliefs on infant educare and curriculum from their day-to-day field experiences, building a clear and desirable image of infant professionals. When all of these four resilient powers were working together, the infant caregivers could overcome the difficulties and grow as real professionals. The results of this study shed light on the necessity of systematic caregiver education to attract, educate, and retain capable infant caregivers in the field and the necessity of improving regulations to support infants and caregivers in everyday practice.

**Title of the submission:** A Review of Research Papers on the Relationship between Metacognition and Emotion in Korea

**Topic area of the submission:** Educational Psychology

**Presentation format:** Poster Session

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## **Abstract**

This study aims to examine research published in Korea on the relationship between metacognition and emotion in childhood and adolescence to investigate whether metacognition correlated with emotion in childhood and adolescence in research published in Korean journals and how metacognition affected the relation between emotion and behavior. The studies reviewed reported that metacognition was positively related to emotion and acted as a significant moderator variable.

# **A Review of Research Papers on the Relationship between Metacognition and Emotion in Korea**

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Metacognition refers to the capability using the strategy to regulate one's own cognitive ability and knowledge (Flavell, 1979). Studies regarding the relationship between children's metacognition and emotion have reported that metacognition has been associated with various emotional outcomes including emotional disorders and problems. However, relatively little studies have been conducted in the Korean family contexts. The present study aims to review literatures including empirical evidence on the relationship between meta-cognitive ability and emotional outcomes in Korean children and adolescents.

For the literature review, five articles were selected from four academic journals of Korea published between 2004 and 2013. All the articles were shown in the KCI(Korea Citation Index) database. All of the five articles showed that negative emotion such as worry and anxiety was positively related to metacognition. However, none of the articles reported a significant relationship between children's meta-cognition and positive emotional outcomes. Discussion included the influence of meta-cognitive ability on the expectation and regulation

of negative emotional experiences, and suggestions for future research were also proposed.

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**1. Title of the submission**

: A Critical Discourse Analysis of the Nuri Curriculum for 3~5 Year- Olds in Korea

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## **A Critical Discourse Analysis of the Nuri Curriculum for 3-5 year olds in Korea**

### **I . Introduction**

The importance of early years to children's lives has been increasingly recognized across the world. UNESCO has developed the International Standard Classification of Education(ISCED) in 2011 to respond to the changes taking place in education systems and social policies around the world. In their report, of particular note is their new categorization of the early childhood period, which had been previously recognized as 'the stage zero', to two sub-stages: the 'early childhood development' for those aged birth to two and the 'pre-primary education' for those aged three to five. This change has reflected the worldwide belief that childhood development should not be seen as a mere step prior to primary school years but a stage of its own, arguing for better systematic education during early childhood(Park & Shin, 2012). In response to this movement, most developed countries in the OECD including the United States and the United Kingdom have established a free public education system for children aged three to five(Ministry of education, 2013).

In Korea, owing to those global trends, the significance of early childhood education also has been emphasized. As a result, Korea set out a national, common curriculum, called the Nuri Curriculum in 2012, for five-year-old children. In 2013, the Nuri Curriculum has been expanded into age three and four(Korea institute of child care and education, 2012). Despite this recent educational policy reform movement for early childhood education in Korea, little adequate political analysis has been conducted. Particularly, discourses embedded in policy have not been critically reviewed.

According to Foucault (1971), a discourse is a collection of signs with an agenda, and all cultural and linguistic activities of men are subject to analysis. From Foucault's point of view, discourse is historically operated by both rule of exclusion and control, and for this reason only those with a specific educational background and qualification can participate in a discourse and have the right to be granted expertise and credibility regarding the subject. In this regard, policies have been reviewed in relation with discourse. That is, those who participate in a discourse on a certain topic are those considered to have expertise in the field, and their discourse eventually gets reflected onto policies. These policies, in turn, affect the views of the so-called laymen, and then form the basis of social discourse on a certain topic. For that reason, a discourse analysis on policies has been used as a useful research method to reveal not only political hypotheses that would be considered as natural but also power relations inside the policies.

This study aims to reveal how social discourses have rationalized the Nuri Curriculum and constructed the meanings of early childhood education and care in Korea. For this purpose, we analyzed *the Manual of the Nuri Curriculum* for children aged three to five, co-published by the Ministry of Education, Science and Technology and the Ministry of Health and Welfare in 2012 for five year olds, and 2013 for three and four year olds.

The Manual consists of three parts; part 1 includes the introduction of the Nuri Curriculum and its background. Part 2 describes its goals and structure. Part 3 explains five core contents in the curriculum. We analyzed the texts of part 1 and 2, and looked into the discourses used to rationalize the goals and needs of the educational reform and construct the ideal images of early childhood education and care in Korea.

## **II. Background -Early childhood education and care in Korea**

Historically, Korea has had its divide system for early childhood education and care. That is, early childhood education is provided through kindergartens under the supervision of the Ministry of Education and Human Resources Development(MEHRD), while early childhood care is provided through childcare facilities under the management of the Ministry of Health Welfare(MHW). Under this dual system, kindergarten and childcare facilities had two separate national curriculums, the National Kindergarten Curriculum and the National Standards Education Curriculum with different focuses; the National Kindergarten Curriculum focused on early learning and preparation for school, and on the other, the National Standards Education Curriculum with their charitable and welfare focus. However, the need for integrated education and care services for young children has increased to provide quality and equity education with children.

As a response to this demand, the government announced the establishment of the national common curriculum for early childhood education curriculum in 2011. MEHRD and MHW had worked together, and established the Nuri Curriculum for age five, which has been implemented since 2012. The curriculum emphasizes children's well-being, safety and citizenship, and includes five development areas: motor skills and health, communication, social relationships, art and science. Starting from 2013, the Nuri Curriculum has been expanded to ages three and five. As a result of this educational reform, three to five-year-old children came to receive consistent quality of services regardless of the type of education and care institution.

In spite of a recent upsurge of interest in the Nuri Curriculum, however, few studies have been conducted in regard with this new national common curriculum. Among the existing research, some focused on the educational contents in the curriculum. These researchers analyzed the activities addressed in the teacher's guide book published by the government. For example, Ahn (2012)

examined musical activities and Kwon and Im (2013) investigated scientific activities in the teacher's guide book. Cho (2013) also analyzed the teacher's guide book in terms of its contents and structure. Other researchers pay attention to teachers, and investigate their perception about the Nuri Curriculum. For example, Chun and Seoh(2012). Lee(2012) and Park(2013) look at the teachers' perspectives of the new curriculum. Sohn(2013) investigates the teachers' implementation and effects of the curriculum. Chung(2013) examines the teachers' satisfaction with the Nuri Curriculum. In addition, some other studies have been conducted with the focus of the consistency of the Nuri Curriculum and the national Elementary Curriculum. Park(2013) examine the contents of the Nuri Curriculum and compare it with the national Elementary Curriculum. Other researchers also analyze both curriculums in terms of the educational philosophies(Hwang, 2012), and developmental domains(Lee, Chun & Park, 2012).

Although the existing research provides us with the description of the curriculum, its contents and its implementation, it fails to connect the past, present and future of our society within the discourses of early childhood education and care. If the past did not exist, the present and the future do not and will not. Therefore, a research on the past is necessary because the present can be recognized and the future is prospected based on a research on the past. Therefore, this study intends to approach to the Nuri Curriculum with the method of the discourse analysis so offers the critical insights of how the curriculum has been developed and worked in Korean society.

### **III. Critical Discourse Analysis Framework**

Discourse analysis was affected by the concept of discourse developed by Foucault. There are two different approaches to the discourse analysis(Philips & Jorgensen, 2002). First, which was originated from the study of Laclau and Mouffe(1985), there is a perspective viewing discourse as not only an absolute actor, but also society itself. In other words, according to this point of view, society does not exist independently of discourse but within conceptualization and discourse. The second type looks at discourse as a semiotic and linguistic component that includes texts, locution, and gestures. This type is referred to as the Critical Discourse Analysis(CDA), as represented by Fairclough(1999). According to this viewpoint, discourse is a certain snapshot of social execution or social reproduction or the moment at which such execution takes place. In other words, discourse can be seen as being combined with social execution and as having social influence and impact within that limit(Chouliaraki & Fairclough, 1999).

This study takes the second perspective, that is, Fairclough's CDA. We chose CDA as our methodological tool because CDA helps us to understand how practices have been socially

constructed in the official document of the curriculum, and as a result create and recreate the discourses of early childhood education and care in Korea.

Fairclough(1995; 2011) discussed discourse in three aspects: description, interpretation and explanation. The description means the activity analyzing on the formal aspects with much interest. In order to analyze the description, Fairclough suggested ten questions. Through these questions, we can recognize the features suggested in the texts and glance the formal features and the types of discourse. Interpretation shows some interest in the relevance between the texts and the interaction. Therefore, the texts are considered as the outcome of output process and the resource of interpretation process. Explanation shows some interests in the relevance between the interaction and the social contexts, that is, the social decision content on the outcome and interpretation processes and its effect on the society. The reason that Fairclough classified a discourse into these three aspects is because a discourse includes the social conditions related to different layers of social situation, social institution and social structure. And these social conditions shape and reshape the way people interpret and represent the texts. Therefore, it includes the analysis of the relevance among the texts, the processes to interpret and the social conditions to analyze a discourse. Thus, investing the discourse from the three levels of description, interpretation and explanation can make us understand the whole process forming the discourse.

This study used the official text from Korean government: *the Manual of the Nuri Curriculum* for children aged three to five(MEHRD & MHW, 2012), as its subject for analysis. Using Fairclough's CDA, we examined how the Nuri Curriculum works, or as Fairclough put it(2001, p.140), 'the inter-discursive work of the text materializes in its linguistic and other semiotic features.'

#### **IV. Findings**

The relationship between the texts, the process and social structure is 'mediated by the discourse which the texts is part of(Fairclough, 1989, p.140)'. From the in-depth CDA, we found that the Nuri Curriculum was the discursive space embedding the related discourses and the social structures in which it is situated.

Within the document for the Nuri Curriculum, the most evident genre was the information delivery and propaganda. The purpose of this genre was to sell the new policies to the concerned people such as teachers, principals, parents and other members, particularly tax payers in our society. Therefore, the texts strongly persuade the readers that the new educational reform of the Nuri Curriculum is necessary. Here, we discovered that the policy's background and vision contain the discourse of change. That is, historically in Korean society there has been the discourse of education that it is a parent's responsibility to educate their child. Accordingly, parents have

invested much of their energy and money on their child's education not only inside but also outside school. This discourse has resulted in the extreme expansion of private sector in education, and brought a big gap in the educational achievement of students depending on their parents' socioeconomic status. As a result, many parents have felt burden on raising their child, and the birthrate in Korea has come to dramatically decrease since the beginning of 21 Century. The birthrate decrease became a serious national issue as it was related to the workforce reduction and the aging population increase. The demand for change has been raised that the government should take the responsibility for educating children. The discourse to call for the change at the national level has embedded all over the texts in the *the Manual of the Nuri Curriculum*. In the background part of the Nuri curriculum, most agents were described as the 'nation'. That reflects the discourse of national change insisting that education for young children should be taken charge by the nation, as described in *the Manual of the Nuri Curriculum*.

*National awareness that the nation should take an active role has been expanded. In order to reduce significant educational gaps among social classes, we should give every preschooler the educational benefits (Manual of the Nuri Curriculum for 3-5 years old, 2013, p.6).*

*Many people agree that policies for education and child care should be reformed. There is a social consensus that we should provide an equal right with all infants to be receive quality education, particularly for six-year-olds (Manual of the Nuri Curriculum for 3-5 years old, 2013, p.6).*

In addition, we found that this discourse of change in early childhood education is interwoven with the discourse of globalism. Fairclough(2001) insisted that the discourse of the globalism is ideologically worked as the discourse of power. That is, it is the discourse of economics that is used in being connected with other resources in order that the people with power strength their own power. Within this discourse of globalism, the values of everything are judged economically; when a thing is judged as having economic profit, it is considered as valuable. With this perception, Korea made every judgment from the aspect of economic profit and appointed relative predominance. According to Fairclough's discourse of globalism, as the liberalism became globalized and the economic elements were changed into the power keeping the vested rights of people with power, and those economic elements were eventually judged its value in connecting with other resources.

*The importance of early childhood development has increasingly been recognized as Heckman(2006) reported that if the investment cost by life phase is calculated in the same cost, the return rate on early childhood investment would be the biggest one. Also American Perry Preschool Project(2003) reported that \$1 investment in early childhood education caused the benefit of \$16.14 in return.. English EPPE Project(2007) reported that supporting about 2,500 pound to enable 1 infant to attend on a preschool had the same effect directly supporting about 17,000 pound on his/her poor parents' income. (Manual of the Nuri Curriculum for 3-5 years old, 2013, p.7: 4-11).*

As shown above statements, under the global trend connecting the effects of early childhood education with economic value, current Korean education cannot but think in connecting the economic element. In the *Manual of the Nuri Curriculum*, it is often found that economic metaphors such as investment and human capital are used. Concerning the use of metaphors, Fairclough insisted that metaphors are instruments expressing an aspect of experience by reflecting it into another experience. Particularly, some interest could be found in the relevance with the analogies substituting the original aspect(Fairclough, 2001). Therefore, metaphorical expressions like investment and development of human capita reveal the fact that the economic concept contained the expressions are the major values in Korea currently. In view of this, no understanding of political discourse is complete without an adequate account of metaphor;

*National investment on 6-year-old children is an international trend. OECD members are recently expanding the free education and free child-caring in order to solidify the publicity of early childhood education and care. They expand the target ranges from the 6-year-old children to the 3-year-old children and strategically make enough investment on the children. For the OECD members, average burden rate of public on preschoolers' education cost was 79.7%: Finland 90.6%; France 94.0%; England 86.1%; the U.S.A 77.8%. Most EU members as well as the two nations in the North American region take the public burden of preschooler education cost over OECD's average burden rate of public. However, Korean public burden rate was 49.7% far less than OECD's average public burden rate of 62%, indicating that Korea should expand the public investment on the early childhood education and child-caring(Manual of the Nuri Curriculum for 3-5 years old , 2013, p.6).*

The above text indicates that the day-to-day language in daily life is used in metaphorical meanings. In particular, economic metaphors show the macroscopic social changes that the educational phenomena are encompassed in the globalism. That is, through the use of economic

metaphors, it shows the social changes insisting that the educational achievements should also be shown in economic effects.

Another discourse evident in the Nuri Curriculum is the discourse of developmentalism. Discourse of developmentalism is the concept emphasizing the human's natural development and insisting that the development should be led to the learning. This concept is created from the reconceptualists. Reconceptualists insisted the necessity of learner-centering education with opposing the concept of curriculum development insisted by the traditionalists represented by Tyler. Therefore the reconceptualists' learner-centering education concept is considered to be relevant to the connection between human's natural development and the education. Especially, the developmentalism is the concept emphasized in the early childhood education. That is, the developmentalism insists that each preschooler's development stage, individual developmental gaps and each preschooler's social & cultural experiences should be considered in teaching the preschoolers. Therefore this viewpoint is reflected in the guidebook of Nuri curriculum. That is, the guidebook emphasizes the necessity of education suitable for each preschooler's developmental stages and describes the preschooler's learning environment, the teaching & learning plan, and the operation and the evaluation and the environment composition connecting with the each preschooler's development stage. That means that early childhood education is delivered by the teacher, but the preschooler as a learner should be participated in the education, not being delivered only by the teacher. That is, in the manual of the Nuri curriculum, a preschooler is described as an active learner learning by himself, and the play is emphasized as a way of learning, as described below.

*With considering the preschooler's interest, developmental level and his/her experiences in daily life, the educational, caring activities around the play should be carried out(Manual of the Nuri Curriculum for 3-5 years old, 2013, p.22).*

*At organizing and operating the interest field, it is desirable to discuss with the preschoolers about an educational program from the plan phase and operate it in order to reflect the preschoolers' interests and requests(Manual of the Nuri Curriculum for 3-5 years old, 2013, p.25).*

*Teacher needs to plan and provide the plays which ar meet the intended educational goals and contents and the preschoolers can voluntarily and actively participate in(Manual of the Nuri Curriculum for 3-5 years old, 2013, p.27).*

*Based on careful observation, the teacher needs to recognize the preschooler's interests and to provide suitable activities(Manual of the Nuri Curriculum for 3-5 years old,. 2013, p.28).*

Another theme seen in the Nuri curriculum is the individualism. Individualism is the attitude that regulates things based on the individuals. In this perspective, a system design considering the individual's freedom and rights are deemed important. That is, the individualism puts the individual before existing social customs, and considers the activities pursuing for the development of individuality as good ones rather than the enlightened, universal, rational judgment.

This individualism is revealed in the texts of the Manual of the Nuri curriculum by age for 3-5-year-old children as themes like individual's uniqueness, originality, and creativity are stressed for the end of education for young children. In other words, individualism importantly considers that the individual grows up into a creative adult by developing his/her characteristics since his/her early childhood and planning and implementing suitable teaching & learning activities in suitable environment.

*Each preschooler needs to grow up into a creative adult to demonstrate his/her original, unique abilities(Manual of the Nuri Curriculum for 3-5 years old,. 2013, p.15).*

*Early childhood is the period when the creativity can be developed the most actively, so should focus on raising flexible, creative thinking ability based on the child's basic thinking ability(Manual of the Nuri Curriculum for 3-5 years old,. 2013,p.15).*

As shown above, the texts in the manual of the Nuri curriculum describe the individual's characteristics as one to be developed importantly in early childhood. Besides, the texts describes that each preschooler's uniqueness and individuality should be considered in planning and operating the teaching & learning methods.

*It is necessary to admit each preschooler's uniqueness and to support a suitable learning way for the individual preschooler(Manual of the Nuri Curriculum for 3-5 years old,. 2013,p.31)*

*Teacher needs to provide suitable activities and to use appropriate teaching strategies with considering each preschooler's characteristics, not to plan the educational activities only based on the preschooler's age(Manual of the Nuri Curriculum for 3-5 years old,. 2013, p.31).*

It can be interpreted in the same vein to consider the education as individuals' rival relationship and to compare the early childhood education to a 'starting line' from such a viewpoint. That is, individual's learning and development should consider his/her unique characteristics and it is like individuals' competition, so having similar-level educational opportunities in early childhood means that all preschoolers stand at a 'fair starting line'.

*By providing the 3-5-year-old Nuri curriculum integrating the preschooler's education & child-caring courses to all 4-6 preschoolers in Korea, the quality of education before entering the elementary school can be improved, and the fair starting line early in life can be guaranteed(Manual of the Nuri Curriculum for 3-5 years old,. 2013, p.8).*

Another theme is the collectivism, which seems to contradict against the individualism. Collectivism put more important on equity within the group rather than the individual's uniqueness. In the texts, the words such as national identity, society, nation, and government are repetitively appeared. For example, in the text, it is said that 'a child should live in the relations with other people in the community(p,15)' and 'create the culture of learning community(p.29),' 'in order to live as a healthy, happy member in the community of society(p.14).' This shows that texts describes the early childhood period as the starting point for the preschooler to learn the regulations and rules of community. This educational philosophy clearly suggests that Korean educational goal is to form the national community. Even though emphasizing on people's appreciation on the multi-cultures in global age, the fact setting the appreciation on Korean culture as the foundation of education shows Korea uses its education as an instrument integrating the society. While Korean society is gradually being changed into the multi-cultural society, but the premise hidden in the Nuri curriculum is that Korea is a single-race nation. This premise reveals in whole society in Korea including the relevant policies as well as the educational philosophy. So-called multi-cultural policies targeting the foreigners in Korean society cuts back the targets or don't admit the foreigners' characteristics in terms of contents. That is, Korean multi-cultural policies are the policies trying to assimilate the Korea-resident foreigners into Korean society(Cho, 2012). This reflects the sense of pure bloodline deeply rooted in Korean society, so Korean society admits the multi-cultures but tries to integrate the Korea-resident foreigners in one framework of Korean people, not seeing them as individuals. And it is the very education that is one of instruments used by Korean society for achieving this goal.

At critically analyzing the premises as being taken it granted in Korean society, it may be powerful to analyze what premise are absent or omitted in the texts, not only analyzing those

included in the texts(Fairclough, 2001). That is, by revealing the discourse hidden in the texts, the discourse which the author intended to hide or the discourse which is hidden but cunningly delivered to the readers can be analyzed. In this view, we can know that the discourse about the genders is excluded in the Nuri curriculum. One of main backgrounds of Nuri curriculum is the low fertility.

*As you see from the news that recent total birth rate reported into 1.22 baby (National Statistical Office, 2010), Korea suffers from the phenomenon that the world-lowest birth rate is being set in. As Korean population is reduced resulting from the low fertility and the population composition is also changed, more and more people worry serious social problems like workforce reduction, aging population increase and social cost increase resulting from the increase of old population. In such circumstance, the parents' burden of infant and preschooler's education & caring cost is pointed as a main factor exacerbating the low fertility(Manual of the Nuri Curriculum for 3-5 years old., 2013, p.6).*

The Nuri curriculum is proposed in order to solve this serious social phenomenon of low fertility resulting in the reduction of manpower to take the charge of national productivity, and lagging national competitiveness caused from the reduced national productivity. In order to prevent the low fertility from being expanded and to reduce the parents' child-raising burdens(economic burden and high-quality education provision burden), the Nuri curriculum is implemented. However the theme is not discussed in the discourse of low fertility is the social structure from the perspective of women. In Korean society, a woman's childbirth has been a hindrance preventing the woman from joining in the economic activities, so many women are reluctant to give birth. According to National Statistical Office(2011), Korean birth rate in 2012 is 1.30 lowering 0.22 than 1.52 of birth rate in 1997. If this trend is continued, it is expected Korean birth rate in 2015 will be about 1.28. However, the Nuri curriculum investigates the reason of low fertility from parents' child-raising burden, but doesn't consider the woman's place in the labor market.

In the texts of the manual of Nuri curriculum by 3-5 years old, there are not any words indicating the female, but are the participants revealing their roles like parents or teacher, not revealing the 'gender' like the female or the male. This implies author's intention not revealing various problems related to women seen in Korean society or not solve such problems through the education. In other words, in that the author regards the social problems related to women as the women's own problems, not seeing them from a macroscopic perspective, so it can be considered that the discourse about women absolutely exists but is hidden in the texts of the manual of the Nuri curriculum.

## **V. Discussion & Implication**

This study analyzed the texts of the manual of the Nuri curriculum for 3-5 years old in order to analyze the discourses of early childhood education and care in Korea. As the result of analysis, the discourses analyzed around the preschooler's appearance described in the Nuri curriculum is signified and conceptualized in the public document as follows.

First, there was the discourse of change. There created a discourse of change that pervious society recognized the education to be taken responsible for by the individual or the home and the awareness generated various social problems, so the education should be responsible by the nation, now. In its introduction background part, Guidebook of Nuri curriculum clearly reveals the nation as the main object supporting for the early childhood education.

Second, there was the discourse of globalism. As economic factors become important in whole society, and education also use the metaphors like national competitiveness, human capital, support, investment and so forth, the discourse judges the educational value as an economic factor, and describes the education as a valuable one when it generates some economic effects at the same time.

Third, there was the discourse of developmentalism. This discourse is originated from the reconceptualists opposing the concept of curriculum development, and it focuses on the learner's characteristics rather than an education model. Under this course, the Guidebook of Nuri curriculum insists that the curriculum should consider the learner, that is, the preschooler's development stage, each preschooler's developmental gap, and his/her social, cultural experiences.

Fourth, there was the discourse of individualism insisting that the individual's freedom and rights are more important than the society. The texts of Nuri curriculum use the terms like individual's uniqueness, originality, individuality and creativity, etc, and describe that the individual's characteristics should be respected importantly.

Fifth, there was the discourse of collectivism. As the concept contradicting the discourse of individualism, the discourse of collectivism regards the society more importantly than the individual. That is, the collectivism considers the individual as the creature learning his/her social rules and regulations in using the education as an instrument of social integration.

Sixth, the course about the women was a hidden discourse in the texts of Nuri curriculum. Low fertility is said as one of main problems in Korean society, but the texts mentioned about the discourse about women concerning this problem. It can be considered that the texts contain the author's intention not specifying and formalizing the discourse about women.

As reported above, there exist various discourses in the Nuri curriculum. Some discourses are clearly revealed and others are not. But a clear fact that the Nuri curriculum is composed of

compelling discourses containing the hybridized texts. That can be interpreted as that the participants in establishing the texts of the manual of the Nuri curriculum possessed such a discourse, and on the other hand, can be accepted as the participants' hope wanting to deliver these discourses to the readers. That is, it is meaningful in that it can draw the conclusion suggesting that Korean early childhood education takes such a role socially.

Based on our analysis, there are some suggestions for future studies. This study analyzed the texts in the manual of the Nuri curriculum with an analytic framework of Fairclough's CDA and analyzed discourses in Korean society embedded in the texts. For further study, it would provide more comprehensive account if we look at more various data from more macroscopic viewpoint.

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Feminism and Korea literature, 261-287.

## **1. Title of the submission**

: Narrative inquiry of preschool teachers' experiences as agents of the implementation of the Nuri Curriculum

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*\*NOTE: Presentation format has been switched from the paper session to the poster session.*

# **Narrative inquiry of preschool teachers' experiences as agents of the implementation of the Nuri Curriculum**

## **Abstract**

### **I . Introduction**

Recently there have been such a rising variety of issues about the future over the world as low birth rate, population aging, environmental issues and economic polarization. Among them, education has its own importance not only for the current generation but also for the sustainability for future generations. Particularly, the value of the early childhood education stands out economically. Heckman(2006) reported that the investments in early education are the most cost-effective compared with later investments. OECD(2005) highlighted the importance of early childhood education as well, and particularly emphasized that high-quality early childhood education be provided for what heavy investments should be carried out by nations in that early childhood learning builds a stepping stone for the lifetime learning. UNESCO revised ISCED(International Standard Classification of Education) which had been compared and classified nation's educational policy that emphasized ISCED by including it in the basic education(UNESCO, 2011).

Alongside such global movements, Korea also has acknowledged the importance of early childhood education and recently carried out the education in early childhood education and care. The Korean government has strengthened the responsibility on early childhood education and care by adopting an ISCED amendment that UNESCO suggested in 2011. In this respect, Korea has started the Nuri Curriculum a national curriculum for five-year-olds, in 2012, and expanded its coverage to three-and four-years-olds in 2013.

The implementation of the Nuri Curriculum has its significance as it provides high-quality education for both education and child care, and guarantees the equality of the starting point at the early lifetime(Korea Institute of Child Care & Education, 2012). In fact, there used to be two different curriculum(the National Kindergarten Curriculum, the Standard Care Curriculum) for early childhood education and care. On this dualized systems, there is a problem in young children despite attending kindergarten or day-care-center that do not receive the common curriculum education in the quality of it. Therefore, the Nuri Curriculum would be implemented to work out this problem.

In order to increase the effectiveness of implementing this new standardized curriculum, the Korean government has provided the teacher training to the in-service teachers. Training is composed of process backgrounds, meaning, purpose, content and teaching methods of the Nuri Curriculum. Teachers shall receive education lecture-style four by six hours a day. It is not necessarily, however, that teachers implement the Nuri Curriculum uniformly in their classrooms. Since kindergarten teachers' autonomy of is reportedly guaranteed much more than that to the teachers in charge of different grades(Sung, Lee & Cho, 2010).

In reality, after the introduction of the Nuri Curriculum, professionalism of preschool teachers puts more emphasis on the operation of the Nuri Curriculum than before, because they should adjust education curriculum of institute level that used to be managed at the basis of the previous education curriculum of nation level to be appropriate to the Nuri Curriculum. Education curriculum can be considered achieved, when practiced beyond the original plan or the developed level. In this respect, the implementation of the education curriculum means the process that teachers can understand, adjust and practice it rather than act it just for making it real(Marsh & Willis, 2003). It can be understood in view of interaction that

teachers implement and adjust the planned education curriculum(Fullan & Pomfret, 1977). That is, it implies that the teachers' role and ability has an important role in the implementation of education, as their private lives make the difference of the implementation of education curriculum in institutes(Goodson, 1992).

The teachers' role as practice subject means that teachers implement education curriculum actively with thinking and knowledge. And their ability as 'developer of education curriculum' means that teachers are responsible for development, design and production of education curriculum(Darling-Hammond & Bransford, 2005). That is, it emphasizes the role of revising the curriculum that teachers have already understood and practicing it according to the development level of the learners and their interests. To do so, there need to be continuous chances when teachers can develop their viewpoints on education curriculum, teaching and knowledge and learning communities where they can consider the development and the practice of education curriculum(Ornstein & Hunkins, 2004).

In fact, The teachers' role as practice subject is required to implement the Nuri Curriculum. Teachers have been establishing their own identity, during adjusting themselves and performing their roles, under the changing conditions; the great change of the title of existing development category and specific educational contents, emphasis on teaching and caring required to political discourse. It is said that teachers' building professional identity defines the characteristics of their jobs and puts meaning to themselves and jobs(Sachs, 2001). Positive identity about teaching, relationship and roles enables teachers to sustain their passion by increasing self-esteem and self-effectiveness(Day, 2004), which plays a pivotal role to sustain teachers' dedication(Day, Elliot & Kingston, 2005). In other words, teachers taking over independent roles in the implementation of the Nuri Curriculum are likely to establish their identity of being a good teacher.

To understand teachers who implement education curriculum and in the meantime establish their own identity, it firstly needs to look into their lives(Connelly & Clandinin, 1996). Moreover, the observation of teacher's lives should be considered inside and outside classrooms in that the operation of the Nuri Curriculum is not limited to the particular situation or site. However, most of the preceding researches on teachers managing the Nuri Curriculum are now focused on how much they are interested in the developed education curriculum and how faithfully they perform it(Son, 2013). Considering that researches on education curriculum should be studied and developed in the light of specified space and time contexts rather than of general institutes or classrooms(Schwab, 1973), researches needs to be carried out to find out how identity is formed as well as what teachers consider the Nuri Curriculum. Accordingly, the purpose of this research is to figure out how kindergarten teachers comprehend the Nuri Curriculum and establish their own identity as practice subject in a new curriculum. Accordingly research questions are as follows.

1. How do preschool teachers understand the Nuri Curriculum?
2. How do preschool teachers construct their identities as agents as they implement the Nuri Curriculum?

## **II. Research Method**

### **1. Narrative Inquiry**

For this study, we employ a narrative research methodology to listen to the stories of four preschool teachers. Narrative inquiry is an analysis that human beings find meanings about the experience by telling their own lives to others and re-telling them(Clandinin & Connelly, 2000, p63). It is based on analyzing a person's life and re-organizing it, which helps us

understand the situation and the culture that the preschool teachers. Furthermore, it is the methodology that can represent how teachers construct their identities (Connelly & Clandinin, 1996). For these reasons, we chose narrative inquiry as a methodological tool to investigate what preschool teachers experience when implementing the Nuri Curriculum and how they form their identities in the process of implementing the curriculum.

## 2. Participants in the research

### i) The site of study

This study will be conducted in one preschool, named Bansok preschool<sup>1</sup>. Bansok preschool is a private preschool, located in Yang-choen Gu, Seoul. It provides its service to from two-years-olds to five-years-olds, and has implemented the Nuri Curriculum since 2012 (to five-years-olds in 2012, and to four-years-olds in 2013). It has five classes in total, one class for two-years-old, four-years-old and five-years-old each and two classes for three-years-old. Classes start at 9:30 in the morning and end at 2:30 in the afternoon. Teachers have frequent regular staff meetings. Overall, they have two different kinds of staff meetings: monthly meetings and informal preschool-center-based supervision meeting. Monthly meetings are held by the teachers in the beginning of the months. In these meetings, teachers discuss the general management of the Nuri Curriculum such as evaluation for the previous unit theme, class preparation for the next unit theme and education plans on a monthly basis. Teachers also have the informal preschool-center-based supervision meetings. The meetings are about difficulties in teaching and behavior guidance or positive teaching cases of the each class by sharing their experiences in classrooms. We will make an observation for those staff meeting for this study.

### ii) Participants

Participants in the study are three teachers working at Bansok preschool. The background of the teachers is as follows.

name	age	Years of experience	Education Level	The age of classroom
Cho	28	4years	Bachelor	5
Lee	33	9years	Bachelor	4
Kim	36	12years	Bachelor	3

Each Teacher teaches three-year-olds, four-years-olds and five-years-olds. Among them, Cho has implemented the Nuri Curriculum for two years since 2012. For Lee and Kim, it was their first year to implement it in 2013, the year when we conduct the study. Teachers are all female and the average years of their teaching are 8.3 years. Their level of education is high as all of them gained Bachelor's degree.

## 3. Data Collection and Plan of Analysis

<sup>1</sup> All names in this paper are pseudonym.

### **i) Individual Interview**

Each teacher will have five individual interviews. Individual interview will be held in the place where the participants prefer, for approximately one and a half hours, from September to November in 2013. Particularly the oral history interview method will be used for this study. The oral history interview is the most frequently used form for narrative inquiry (Clandinin & Connelly, 2000, p87). The aim of oral history is to gain first-hand knowledge from people who have lived through different social–historical–political periods and events. We will use semi-structured questionnaires, but also allow the participants to tell their stories in their own manner (Clandinin & Connelly, 2000, p.209).

### **ii) Participant Observation**

We will conduct an observation for this study. The observation will be mainly made during the staff meetings that the participant teachers attend. Therefore, two different kinds of staff meetings will be observed: monthly meetings and the informal kindergarten-center-based supervision meetings. Six observations will be made in total; two monthly meetings, four informal kindergarten-center-based supervision, from October to November 2013. We will attend all the meetings as an observer, and make field notes during observation.

### **iii) Collecting Documents**

In addition to the individual interviews and observation, related documents will be collected from the participants such as monthly, weekly, and daily lesson plans, the curriculum plans of the institutes and the guidelines of the Nuri curriculum sent from the government.

### **iv) Analyzing the Data**

Organizing field texts into research texts is a process that discovers meanings on experiences (Clandinin & Connelly, 2000: 239). It is designed to deal with field notes and recordings and read them repeatedly to find the meanings. The teachers are made to remind their own experience and keep telling them to the interviewer so that they can elicit educational meanings from the process. When the teachers read the story, they categorize the understanding and the role of the Nuri Curriculum and identity and thereby find out important subjects and sub-topics in the story. They are expected to review the elicited cases repeatedly and find the common messages.

In order to the reliability of the data, 'Triangulation', suggested by Guba and Lincoln (1994), helps the collected documents to be analyzed multilaterally. Two experts on the teacher training and a PhD student review if the analysis of the categories about the documents is valid or not.

## **III. Expected Results**

The purpose of this research is to elicit the understanding and practice of the Nuri Curriculum and educational meanings of forming identity by talking about events, joy and difficulties that the teachers experience.

Expected results are as follows; first, teachers' story can be understood in a process where teachers and researchers eagerly participate. Second, it is expected that the established identity of the teachers is reconstituted. Third, the story of their life plays an important role in figuring out the culture of the teachers, and then the understanding of experience should be treated as the knowledge as we can find the knowledge in the real.

Most of the researches on the teachers as practice subject of the Nuri Curriculum is mainly about artificial position or level. What we think about, however, should be the teachers' own history and story. That's because we can apprehend the real education environment condition, which can resolve the gap between theory and practice that many researchers have pointed out. In this respect, this research will help teachers reveal practical knowledge, which is integrated for teaching practice based on their values and beliefs. It will suggest that the attitude of the researchers is important, listening to the voice of the teachers who practice the education curriculum with an ability of variation.

We communicate with each other every day. We have what someone else wants to listen to in mind. We are more likely to involve in individual stories than in stories about groups. If someone wants to persuade someone else, he or she is advised to talk about his or her personal and specific story. That is 'Unpacking effect'. It is the study that researches human-based education environment. Thus, there should be efforts to listen to teachers and sympathize with their story in a communicative circumstance rather than look at them from my one-sided point of view. What should be remarkable existence are teachers, creating daily lives, whose experiences should be analyzed and made meaningful by the researchers of early childhood education.

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Dear, Hawaii International Conference on Education

I like to submit a proposal as follows:

The title page

1. Title of the submission

The Adult Learning as a Reconstructing the Personal Experience Trace  
:Interview with “Personal-Research-Based Program” Participants in Japan

2. Name of the author

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6. Abstract

The purpose of this study was reconsidering the state of training program for in-service child care workers in Japan. This study explored the learning process of the adult learners who have participated “Personal-Research-Based Program(PRBP)”. PRBP is a training program that supports the each learners to conduct personal research based on their own experience on early childhood education and care(ECEC) field. Semi-structured interviews were conducted with ten program participants. The data was analyzed using the Modified Grounded Theory Approach. The results suggested that, 1) Participants have a desire of learning itself, 2) Participants were not only trying to solve their own problem relating their practice of ECEC but also have the concern on changing the of social system, 3) The process of participants` learning was closely related to reconstructing the learners` personal experience trace.

Sincerely yours,

Risa Kodama



# A Study on the Relationship Between Metacognitive Strategies and Self-learning Ability

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## Abstract:

Based on the researches of learning strategies by scholars both abroad and at home such as Rubin, Nunan, O'Malley & Chamot and Wen Qiufang, 93 students from thirteen different majors in Beijing University of Technology are surveyed about their use of metacognitive strategies and self-learning on line for one semester by using Wen's Questionnaire on English Learning Strategies and online self-learning and testing record.

The three research questions are (1) Is there any difference in the use of metacognitive strategies between the low mark group and the high mark group of test achievements of the subjects? (2) Is there any difference in the time and frequency of online self-learning and testing between groups different in using metacognitive strategies? (3) Is there any relationship between the time of online self-learning, the frequency of online self-testing and the final test achievements?

Mean value difference of Independent Samples T test of test achievements groups shows that there is a significant difference between high and low mark groups in cognitive management strategies (t value is 2.152). The high mark group uses more cognitive strategies.

Mean value difference of Independent Samples T test of cognitive strategies groups shows that there is significant difference between high and low mark groups in online self-learning (t value is 1.269) with the high mark group of cognitive strategies spending more time in average in self-learning than low mark group; there is extremely significant difference between high and low mark groups of cognitive strategies in online testing (t value is 3.558) with the high mark group students doing many more times of online testing.

Correlation analysis of online self-learning & testing and test achievements shows that online self-learning (hours) and test achievements are positively correlated (0.599); online testing (times) and test achievements are positively correlated (0.498); that is, the more online self-learning and the more times of online testing students have, the better their test achievements are.

The above analysis results suggest that students who are better aware of the use of cognitive strategies show initiative in learning, having better self-learning ability and test achievements. It agrees with Wen Qiufang's research result. Therefore, we can train metacognitive learning strategies accordingly by analyzing students' efforts first, hoping to improve test achievements of poor learners and train their self-learning ability.

## Key words:

metacognitive strategies; online self-learning and testing; test achievements; self-learning ability

Dear, Hawaii International Conference on Education

I like to submit a proposal as follows:

The title page

1. Title of the submission

The Acceptance and Development of Clay Activities in Early Childhood Education and Care in Japan

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6. Abstract

The purpose of this study is to examine the history of the acceptance and development of clay activities in early childhood education and care (ECEC) in Japan influenced by Friedrich Froebel's "Gifts". The clay activity is one of the most popular activities in Japanese ECEC practice at the first public kindergarten in Japan attached to Tokyo Women's Teachers College (currently Ochanomizu University) and established in 1876. This showed the significance of clay activities in ECEC in Japan. This study analyzed the literature from the Meiji era to the present including the kindergarten guidelines published by the Japanese government. The results also showed that clay activities were treated as a task rather than a play, but also had a value of playing with and enjoying the process of making with. This study suggests that it is important to encourage children in expressing their human feelings prior to concrete forming.

Sincerely yours,

Yoshiko Nanyo

1. Title of the submission: Relationship between job-hunting activity self-efficacy and campus life experiences in university students

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6. Abstract: Job-hunting activity self-efficacy (JAS) is known to predict the degree of efforts made by university students for job-hunting. However, it is possible that the Positive Illusion (PI; Taylor & Brown, 1988) also affects JAS: Students with high PI could be excessively optimistic and confident about getting jobs without making an effort. Based on the results of an empirical study, I found that the relationship between JAS and effort level was weaker for students with high PI than for students with low PI. In order to develop appropriate JAS, students might have to accumulate practical mastery experiences in which they achieve their goals by making an effort. Campus life experiences during university education might develop the self-efficacy of students. The purpose of this study was to explore the relationship between JAS and PI and how mastery and campus life experiences moderated these relationships. University students (N = 401) responded to a survey. A correlation analysis of the responses revealed that there was a significant relationship between JAS and PI. This relationship was weaker for students with much mastery experiences than for students with little mastery experiences and weaker for older than for younger students. The findings suggested that education, which facilitates students' mastery experiences, might develop realistic JAS with low PI and lead students to enthusiastically work hard on job-hunting activities. These findings are discussed in relation to career education in universities.

# HICE 2014 Abstract

**a. title of the submission**

Learning Strategy Use and Categorized Perceived Benefit

**b. topic area of the submission**

Educational Psychology

**c. presentation format**

Poster session

**d. a 2-3 sentence description of your presentation which should not exceed 75 words in total.**

The influence of the categorical combination of two terms (short, long) and two methods (anytime, circumstantially) perceived benefits on learning strategy use was investigated, and participants were Japanese undergraduate students. Long-anytime perceived benefit which mediated short-anytime perceived benefit had positive influence on strategy use, and long-circumstantially perceived benefit which mediated short-circumstantially perceived benefit had positive influence on strategy use. In addition, short-anytime perceived benefit was shown more effective than short-circumstantially perceived benefit on strategy use.

方略使用に対する有効性の認知は動機づけよりも方略使用に影響することが示されている。本研究の目的は2×2の有効性の認知が方略使用に与える影響を明確にすることであり、大学生を対象に調査を行った。分析の結果、長期的—継続的な有効性の認知は短期的—継続的な有効性の認知を媒介して方略使用に影響し、長期的—適宜的な有効性の認知は短期的—適宜的な有効性の認知を媒介して方略使用に影響していた。なお、継続的な有効性の認知の方がより方略使用に影響していた。

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**NATIVE AMERICAN-BASED MATHEMATICS MATERIALS FOR UNDERGRADUATE COURSES  
Part II**

**Topic Area: Curriculum, Research and Development**

**Presentation Format: Paper Session**

**Description: This project develops and researches undergraduate mathematics materials based in the culture and mathematics of Native American Peoples for integration into undergraduate courses. Mathematics topics include probability, number theory, transformational geometry, and pre-service elementary and secondary education-related content. These materials--both paper and electronic--are classroom ready, and are developed and piloted in consultation with Tribes in the Rocky Mountains, Plains, Pacific Northwest, and Southwest. This is an NSF DUE TUES Type 2 funded project.**

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**ABSTRACT:** This session will present mathematics materials based in the culture and mathematics of Native American Peoples. These materials--both paper and electronic--are classroom-ready, and were developed and piloted in consultation with Native American Tribes in the Pacific Northwest, the Rocky Mountain Plains, the Pacific Northwest, and the Southwest. It will also discuss the philosophy behind the materials and the need for them. This is an NSF DUE TUES Type 2 funded project.

The session will include the following topics:

- 1. The background and need for the project.**
- 2. The relationship between culture and mathematics for Native American peoples.**
- 3. A discussion of the progress of this project during Year II.**
- 4. The mathematics of Native American people that may be of interest to teacher educators and teachers of grades 9 – 12.**
- 5. Examples of the classroom-ready materials selected from probability, number theory, transformational geometry, and pre-service elementary and secondary education-related content.**
- 6. Connections between these materials and other select groups of students.**

**Title of submission:** The context of school citizenship teaching in Malawi;  
*Implications for nurturing deliberative values and skills*

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## ABSTRACT

This paper presents preliminary findings from an ongoing graduate study on “*Education and emerging democratic citizenship in Malawi*”. The present study, investigated the context of school citizenship teaching in secondary schools in Malawi and its impact on nurturing students deliberative values and skills. Data on knowledge of deliberative practices, perceptions and general school practices was collected through a survey, to understand how these relate to nurturing students’ deliberative values and skills for active citizenship. Questionnaires and interviews were used to collect data from teachers and students in four study schools in Malawi. Quantitative data was analyzed using descriptive statistics, and qualitative data was analyzing based on emerging themes. The study found that in general both teachers and students favor deliberation as a democratic practice and generally report elements of it in some school affairs. However from interview data it was apparent that school authorities seem not very enthusiastic about encouraging serious deliberative practices in the schools. Teachers expressed fears of encouraging discipline problems by allowing students more freedom and involvement in the affairs of the schools. The study consequently found limited evidence on deliberate measures taken by the schools to encourage deliberation between students and school authorities, favoring more control in the governance practices. The implications of these findings and future direction of the research are discussed.

## Enhancing Education for the Teacher/Athletic Coach

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### Abstract:

Georgia Southern University is noted as the largest “Teaching First University” and was the second university in the United States to have a nationally accredited Coaching Education Program. This program was established to provide teachers who wanted to coach sport teams the tools to meet the National Standards for Athletic Coaches established in 1995.

This presentation will highlight the pedagogy aspects of Georgia Southern University and the Coaching Education Program. This session will include: Student Assessments, Faculty Assessments, Curriculum Adjustments, Freshman Orientation, Undergraduate Coaching Minor, Online Master of Science Degree in Kinesiology in Coaching Behavior, Coaching Certifications, National Coaching Journal, International Experiences, Grants, Research, Field Experiences and Educational Research Leave. A power point and interactive approach will be utilized to present this paper.

Revisiting the Professional Identities of Transnational Foreign Language Teachers in the United  
States

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**Abstract**

Most research on transnational foreign language teachers' professional identity formation focuses on how teachers from non-Western ethnicities negotiate professional identities in Anglophone countries other than the U.S. Motivated by our experiences in education, we examined professional identity formation in transnational foreign language teachers from both Western and non-Western cultural contexts in U.S. classroom settings through Third Space theory. In this study, we examined how transnational teachers negotiate the cultural and educational practices in U.S. foreign language classrooms, and how they create their own teaching third space at the core of their professional identities. Our findings showed that the transnational teachers' professional identity formation processes were complex and ongoing. Viewed from the third space framework, teaching in the new settings is a constant construction and reform process of professional identity. Transnational teachers mixed aspects of American and their home countries' teaching cultures while negotiating their classroom practices. There is a great deal of ambiguity in their everyday teaching practices and negotiation of meaning throughout the processes as they demonstrated their in-between personalities.

1. Title: Exploration on the instructional model in a reformed calculus classroom
2. Topic Area: Mathematics Education
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# Exploration on the instructional model in a reformed calculus classroom

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## Abstract

In order to promote students' conceptual understanding, this study is designed to explore the potential of integrating the question-based teaching and the open-ended approach in a reformed calculus classroom. The most important basis is that students should be involved in the teaching process. All samples are selected from two classes of freshmen in engineering college. Note that one class for experiment group and the other for control group, and each class has about fifty students. Both of quantitative and qualitative data are collected and analyzed.

Students are often encouraged to express their understanding in class based on their own knowledge. Moreover, prompting students to give more detailed explanations and discuss their reasoning, we hope, helps to fill in the gaps for a student who may have been struggling to understand the ideas being represented. Further, teacher often provides open-ended problems to stimulate their thinking and elicit a deeper discussion via small group work. In particular, two special strategies are used in this study: (1) Question-based teaching: Based on the reports of Mason(2000) and Resnick (1995), three models (focusing, inquiring and testing) and four kinds of questioning techniques(repetition, re-voicing, close questioning, and challenging) are included. In addition, (2) Open-ended approach : Including those steps of lesson plans, developed by Becker and Shimada(1997). In fact, these strategies may be viewed as attempts to promote students' understanding in a reformed calculus classroom. Results indicate that students in low achievements usually spend less time each week in doing homework, and they often dislike of teacher's classroom questioning. Both classes are significant difference in learning motivation.

**Key words:** Learning motivation, Question-based teaching, Open-ended approach.

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**Submission ID 1293**

Title of the submission: **What are we really testing?**

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## **Abstract**

The purpose of this presentation is to present to an audience of k-12 educators the impact of assessment development on teaching and learning. Assessment development is a rigorous process that is often times left to the experts found in large testing companies. Today, however, more school districts are beginning to develop their own assessments to measure student learning outcomes. This presentation describes the process of how a school district uses assessment development to create district-wide assessments and improve student learning.

In response to the demands of creating valid and reliable assessments across multiple subject areas and grade levels, a 50 hour Assessment Development course was created. Informational flyers and Interest Forms were sent out throughout the district to solicit teacher participation in the assessment development process. As a result, there were 38 teachers from a variety of subject areas and grade levels who submitted Interest Forms.

School district personnel from the Department of Research, Evaluation, Assessment and Accountability created four assessment development modules in order to facilitate teachers through process. An overview of these four modules---Creating a Test Blueprint, Item Writing, Test Formatting, and Revisions/Edits will be discussed during the presentation. The presenters will also discuss how the team of teachers will reconvene in the fall to review item statistics after the administration of pre-assessments to students. Once the item statics are reviewed, the assessments will undergo further revisions and edits prior to the administration of post-assessments during the spring.

The 50 hour assessment development course received rave reviews from teachers who participated. The majority of the feedback was for the course to be a requirement for all teachers within the district. As a result of this course, teachers not only created a valid and reliable assessment, but made the connection between teaching, learning, and assessment. The assessment development process can be a powerful tool used to improve teaching and learning throughout a school district.

The format of the presentation will include an overview of the process and a question and answer period. Individuals who attend this presentation will be able learn the steps in creating an assessment development course that can be reasonably implemented within their school district. Attendees will be able to ask specific questions to presenters on how to implement the assessment development process in their district, school, or classroom.

Voices From the Field: Secondary Teachers' Experiences With Discipline Specific Literacy

Instruction

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### **Abstract**

The development of advanced reading skills among adolescents is paramount in order for students to achieve success both in and out of school. If students are to develop an array of advanced literacy skills that are specific to each discipline, then teachers must understand the importance of promoting discipline specific literacy practices in order for students to gain a deep understanding of content specific information. This presentation will discuss the promise and challenge of implementing discipline specific literacy instruction in secondary schools.

**A Follow-Up: Indicators for Success in First Year Calculus**

**Abstract**

This is a continuation of a study implemented to determine why some students succeed in their first calculus course after completing an early enrollment program. Forty-nine high school students enrolled in a year-long sequence of two university mathematics courses were followed through their first-year, on-campus calculus course. Course grades and surveys were used to determine factors that influence student success. Preliminary results from surveys show students feel that having prior work in calculus is very important. In addition, due to placement changes, early entry students entering Calculus I via prerequisite courses seem to benefit by taking a year-long or extended version of the course.

**KEYWORDS:** calculus, early enrollment, first year courses, mathematics

### **A Follow-Up: Indicators for Success in First Year Calculus**

A successful, collaborative program offering college-level courses to high school students is offered at a large northeastern university. The program courses are offered in a blended learning environment where work is completed both on-line and face-to-face. Information about the development of the project can be found in earlier publications. (Pyzdrowski & Pyzdrowski, 2002, 2003; Pyzdrowski, Mays, Butler, Walker & Pyzdrowski 2009, and 2011). Since Fall 2000, approximately 4,000 high school students have completed College Algebra and since Spring 2003, approximately 2,000 high school students have completed College Trigonometry. A newly developed sequence of courses equivalent to a one-semester course of Calculus I has been offered to approximately 50 students in recent years. From the first offering of College Algebra in the program, course grades indicate that early enrollment high school students seemingly outperform their on-campus peers. Typically the DFW rate for an early entry course in the project is less than 10%. The DFW rate is the percentage of students withdrawing or earning grades of "D" or "F" in a course. A matched pair study performed in 2004 compared several factors of on- and off-campus students in College Algebra. Results indicate that both early enrollment and on-campus groups show a significant gain in score on the math ACT test when used as a pre- and posttest with no difference in gain found between groups (Pyzdrowski et al., 2011).

The goal of any dual credit course should be that students who successfully complete it are at least as well prepared for the next course as those who have taken it at the college from which the credit is given (Bressoud, 2007). In general, entry-level Calculus I courses at our institution have a high DFW rate. Until recently, flow-through data show that early enrollment

students perform as well as on-campus peers in subsequent mathematics courses. Early entry students now seem to be struggling in a 4-credit Calculus I course (Pyzdrowski et al., 2011; and Pyzdrowski, Sun, Curtis, Miller, Wynn, & Hensel 2013).

Table 1 shows DFW rates for students enrolled in Calculus I at our institution. Rates are given for two groups, former early entry students and all students enrolled in the fall offering of the 4-credit course. It is noteworthy that in 2008 the placement exam used for Calculus I was

Table 1

*DFW Rates for Students in Calculus I Courses*


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Semester	DFW rate early entry students	DFW rate all students
F05	44.4% = (12/27)	47.7%
F06	62.9% = (17/27)	57%
F07	31.25% = (5/16)	55.3%
F08	40.9% = (9/22)	35.5%
F09	27% = (8/30)	35%
F10	46% = (18/39)	35%
F11	50% = (16/32)	37%
F12	55% = (27/49)	45%

---

changed and in 2010 the section of the placement exam used for entry into Calculus I was modified. There are typically about 700 - 800 students enrolled in on-campus Calculus I in any given fall semester. It should be cautioned that in this comparison, the number of early entry students followed through is low and that in most cases the difference in percentage for the early entry columns can be changed by adjusting the performance of only a few students. In addition, there are two different versions of Calculus I at our institution (Engineering and Non-Engineering), and differences in student success in each of these versions will be explored.

The motivation for this study is the recent trend of a higher percentage of DFW rates for early entry students when enrolled in their first semester, on-campus Calculus I course.

### **Review of Literature**

Recent evidence suggests that the prior exposure of calculus topics to first semester calculus students is a variable to be studied when exploring reasons for student success. Interviewed Calculus I students have said that having prior experience in calculus is very important for success in Calculus I (Pyzdrowski et al., 2013). Burton (1989) surveyed 741 first-semester calculus students and found that the group most at risk for not passing calculus had no previous calculus experience and could not pass a calculus pre-test on algebra and trigonometry. However in the study, even students who passed the algebra-trigonometry pretest with minimal or poor prior calculus experiences still had disappointing performance. And, given the trend that so many students are now taking calculus as a high school course, it is recommended for universities to rethink the structure of their Calculus I and Calculus II courses (Bressoud, Carlson, Mesa, & Rasmussen, 2013).

In addition to Prior Experience in Calculus, three other themes related to success in calculus were identified during the analysis of four student interviews (Pyzdrowski et al., 2013). Those themes were Prior Course Work, Getting Help/ Pace of the Course, and Instructors. All of the interviewed students felt that the success experienced in prior course work in early enrollment algebra and trigonometry courses was an indicator that they would have success in Calculus I. Students also felt that taking advantage of office hours, getting help when needed and keeping up with homework in a fast paced course was necessary for success. In addition, students felt that instructors played a key role in helping or hindering their success. They conveyed such things as teachers being very helpful in office hours and sometimes difficult to understand during lectures. When asked in a follow-up survey, four of seven students felt that the instructor had more impact than the student on the successful completion of calculus. It should be emphasized that the number of students responding to the survey in the study was small with only seven out of 37 responding.

It was also suggested in the 2013 study that on-campus placement changes may have created a "success gap" between the students placed via a test and those placed using prerequisite courses. It has been found that students who place into college-level mathematics courses based on scores are more likely to pass than those who completed a prerequisite course Morris (2006). It is therefore possible that the new year-long version of Calculus I could be a better course for all students being admitted to Calculus I based on prerequisite course work.

The research question explored in this document is: What are student indicators that lead to successful completion of calculus (grade of "A", "B", or "C") for students enrolled in an early enrollment sequence of algebra and trigonometry courses? The results will provide implications

for teaching, project redesign and suggestions for ways to improve student performance in calculus.

### **Method**

In order to better understand the challenges that face first-semester calculus students entering from an early enrollment program, we collected quantitative algebra, trigonometry and calculus course data. We then collected follow-up survey data from the students in order to capture a global perspective of the attitudes of the students in the study.

### **Participants**

Quantitative data were collected from 49 students (62% male) enrolled in Calculus I during the Fall 2012 semester at a northeastern university in the United States. The students all participated in an early enrollment project as high school seniors and upon entry into the project had at least a 3.0 high school grade point average (GPA) and had earned a C or better in Algebra I, II and Geometry. As high school seniors, they completed College Algebra and College Trigonometry with the grade of a C or better in the 2011 -2012 academic year. In the Spring 2013 semester, 49 of the students were asked to complete an anonymous, online, follow-up survey. Of the 49 students, 14 completed the survey giving a 29% completion rate.

### **Survey**

The project coordinator and researchers used interview analyses and a review of the literature to design a 9-item survey. The survey was given online and was anonymous. In addition to collecting some basic background information, questions explored students' feelings about their prerequisite content knowledge, self-confidence with respect to doing mathematics, enjoyment of doing mathematics, and feelings of relevance of mathematics. There was also an

opportunity for students to discuss the instruction and organization associated with the calculus course. One question asked students if the instructor or student has more impact on the successful completion of calculus.

### **Procedure**

All students in the study completed the four-credit Calculus I course in the Fall 2012 semester. In the Spring 2013 semester, students were asked to complete an anonymous, online, follow-up survey. The results from most survey questions were quantifiable, and in the case of open-ended questions, an analysis was performed. A coder independently analyzed student data, searching for key words and phrases to identify themes that emerged for the group.

## **Results**

### **Student Surveys**

Fourteen of 49 invited students completed the anonymous survey. Six of the students were enrolled in the Engineering Calculus sections. Seven of the students were enrolled in the Non-Engineering Calculus sections. One student did not identify the type of section. Five of the students were re-enrolled in Engineering-Calculus at the time of the survey.

Students were asked to respond to the following prompts if they withdrew or earned less than a C in Calculus I in the Fall 2012 semester. Of the nine students responding in this section, one did not answer the prompt regarding content (see Figure 1).

Seven of the students responding to the survey indicated that having calculus before enrolling into Calculus I would have helped them to do better; but, six of those students had no prior calculus experience. Of the three students who indicated that prior calculus experience was not necessary for success, two had taken AP Calculus in high school. Those two students

indicated that they had poor instruction of calculus while in high school. When asked if they were aware that there was a year-long option for Calculus I, only 7 of the 14 students responded with a yes. Three students mentioned getting help from tutors or their instructor in order to do better in the course. Comments regarding the fast pace of the course were scattered throughout the open responses on the survey and were made by several students.

When asked who has more impact on the successful completion of Calculus I, the teacher or the student, 11 chose the teacher and 3 chose the student. Most interesting was the justification for the choice. The student reflections were, for the most part, very mature. Following are a few of the comments. “With an instructor that knows how to break up the concepts in understandable ways, the students can better understand the material. It all starts with the instructor then it's the students' responsibility from there. Without the instructor's guidance, however it is too much for the student to try to teach themselves.” “I had the most amazing teacher in high school. I believe that is why I, as well as most of my class mates, excelled in her classes. The atmosphere was much different when I actually came to college and it took a while to adjust. It is much more fast paced, and many times, I felt like the teacher didn't truly care about the students.”

## Grade Distributions

In recent years, our University has implemented changes with respect to content, teaching methodology, and assessments in entry-level calculus courses. However, though both the Engineering and Non-Engineering sections of Calculus I feed into a common, coordinated Calculus II course, there are two coordinators for Calculus I. Table 2 shows DFW rates for students enrolled in each version of Calculus I. Rates are given for two groups, former early entry students and all students enrolled in the fall offering of each 4-credit course.

Table 2

### *DFW Rates for Students in Calculus I*

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Semester	DFW rate early entry students engineering	DFW rate all students engineering	DFW rate early entry students non- engineering	DFW rate all students non-engineering
F12	81% = (17/21)	54%	36% = (10/28)	35%

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Table 3 shows DFW rates for students enrolled in the first semester, year-long Calculus I course at our institution. Rates are given for two groups, former early entry students and all students enrolled in the fall offering of the 4-credit course. There are approximately 400 students enrolled in the first semester on-campus, year-long course each year.

Table 3

*DFW Rates for Students in First Semester Year-Long Calculus I*


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Semester	DFW rate early entry students	DFW rate all students
F12	11.4% = (4/35)	41%

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Table 4 shows DFW rates for students enrolled in Calculus I in Fall 2012 who took College Algebra and Trigonometry in the fall and spring semesters the previous year. Rates are given for two groups, former early entry students and on-campus students for each version of the 4-credit Calculus I course.

Table 4

*DFW Rates for Students in Calculus I with Early Entry and On-campus Pre-requisites*


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Semester	DFW rate early entry students engineering	DFW rate on-campus students engineering	DFW rate early entry students non-engineering	DFW rate on-campus students non-engineering
F12	81% = (17/21)	90% = (44/49)	36% = (10/28)	45% = (17/37)

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## Discussion

The research question explored in this study is: What are student indicators that lead to successful completion of calculus (grade of "A", "B", or "C") for students enrolled in an early enrollment sequence of algebra and trigonometry courses? The motivation for this study is trend data indicating that early enrollment students might be experiencing higher-than-normal difficulties in their first on-campus Calculus I course. Students in the early enrollment project must have at least a 3.0 overall high school GPA and a C or better in Algebra I, Algebra II and Geometry at the time of enrollment. Thus, students in the project have relatively good grades. The students succeed in College Algebra and College Trigonometry courses, and while these courses are not among the traditional AP course offerings, they are considered advanced high school mathematics courses. Burton (1989) found that students who passed an algebra-trigonometry pretest with minimal or poor prior calculus experiences still had disappointing performances in calculus. Therefore, prior calculus experience should be investigated more closely.

An analysis of the data suggests that although there is a trend of higher DFW rates in Calculus I for the early enrollment students, the difficulty seems to be occurring in the engineering version of the course. The goal of any dual credit course should be that students who successfully complete it are at least as well prepared for the next course as those who have taken it at the college from which the credit is given (Bressoud, 2007). Early entry students' success in Calculus I was compared with the success of students entering Calculus I via the on-campus College Algebra and College Trigonometry courses. When compared with on-campus students taking the same pre-requisite courses, the early enrollment students were found to have lower

DFW rates in both versions of Calculus I. An additional observation is that there are fewer on-campus students moving through the sequence of courses, algebra to trigonometry to calculus, than expected. Our University had not offered a pre-calculus course in several years. Upon investigation, it was found that 160 on-campus students took College Algebra and College Trigonometry in the same semester in Fall 2012. Those students, mostly engineering majors, were then able to move directly into Calculus I in the Spring 2013 semester. As a result of this finding, in the Fall 2013 semester, our University will once again offer Pre-Calculus and students will no longer be able to enroll in algebra and trigonometry concurrently. This will again change placement criteria for courses before calculus.

A prior study (Pyzdrowski et al., 2013) suggested the possibility that a change in the placement test and scores used to enter into Calculus I created a "success gap" between students placed via a test and those placed using prerequisite courses. Early enrollment students who have successfully completed both algebra and trigonometry are able to enroll directly into Calculus I in their first semester, but due to the difficulties emerging in recent years, students have been advised to consider the year-long Calculus I course. Students taking that option are doing well as compared to their on-campus peers; but, only one-half of the surveyed students knew about that option.

The literature leads us to believe that prior experience with calculus concepts is a factor that could influence student success in entry level calculus. Seven of the students responding to the survey indicated that having calculus before enrolling into Calculus I would have helped them to do better; but, six of those students had no prior calculus experience. The Non-Engineering Coordinator has said that as long as the students have a good grasp of pre-requisites

knowledge, it should make no difference if they have had prior calculus experience. So, is the problem related to the perception of being at a disadvantage, or are students really at a disadvantage if they have no prior experience in calculus? In fact, of the three students who indicated that prior calculus experience was not necessary for success, two students indicated that they had poor instruction of calculus while in high school resulting in difficulties in the course.

Of the 49 students invited to participate in the survey, only 14 responded giving a return rate of 29%. Though this return rate is better than that in the previous study, 19%, it is a disappointing rate. Of the nine students who self-identified as being unsuccessful in Calculus I in their first attempt, it can be seen that in general they felt a lack in content knowledge (no-prior calculus experience), were confident about their mathematical ability, saw mathematics as relevant, enjoyed learning calculus, and did not like how the course was organized. They also did not have outside issues causing a lack of success in the course.

One survey question asked students if they felt that the instructor or the student has more impact on the successful completion of Calculus I. In a previous study (Pyzdrowski et al., 2012) four of seven students surveyed felt that the instructor had more impact on the successful completion of Calculus I. Students making this selection were dissatisfied if an instructor "got behind" in a coordinated course, could not be understood (had a language barrier), or did not seem to care. It was not clear whether students were not taking the responsibility for their learning, or whether there were instructor issues that need to be addressed. In this study, when asked who has more impact on the successful completion of Calculus I, 11 chose the teacher and 3 chose the student. Most interesting were the justifications for the choice. The student

reflections were for the most part very mature and indicate that perhaps there are instructional issues that need to be addressed such as teacher preparedness and pedagogical knowledge and implementation.

### **Conclusion**

It is the intent that findings in this study be used to improve student performance in Calculus I either directly or indirectly. Students surveyed said that having prior experience in calculus was important to the success in the first semester Calculus I course. The literature suggests that given the trend that so many students are now taking calculus as a high school course, it is recommended for universities to rethink the structure of their Calculus I and Calculus II courses (Bressoud, Carlson, Mesa, & Rasmussen, 2013). Should there be different Calculus I experiences for students depending on their prior experiences in calculus? Is it possible that the year-long version of Calculus I is a better course for all students entering based on prerequisite course work. We will explore how many students in our Calculus I courses have had previous exposure to calculus concepts and the impact of that experience on their success in the course. Have placement changes created a "success gap" between the students placed via a test and those placed using prerequisite courses. When early enrollment students in Calculus I are compared with students entering Calculus I via the on-campus College Algebra and Trigonometry courses, they are doing well according to success rates. However, both groups are doing poorly in the Engineering version of Calculus I. Adjustments may need to be made in all College Algebra and Trigonometry sections, both on- and off-campus in order to help students be better prepared for the course. In particular, because only one-half of the early entry students

knew about the year-long calculus course, efforts will be made to better communicate and advise.

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# **Improving the Design Framework of E-learning Game Materials for Information Studies: Consideration of a Student Model**

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## **ABSTRACT**

In 2004, in Japan, “information studies” was established as the core subject area in the field of informatics education at the upper secondary school level. However, few teachers have sufficient pedagogical content knowledge (PCK) in this field, and the method of instruction has yet to be studied extensively. By way of progress in this field, Hirabayashi and Matsuda (2011) proposed an instructional method that integrates 13 items of “informatic and systematic thinking,” which Matsuda (2003) had earlier proposed for the effective use of information and communication technology (ICT), along with Tamada and Matsuda’s (2004) method of cyber ethics education, which was based on three types of knowledge. Moreover, based on their method, my team developed both e-learning game materials and a design framework; we also verified the effects through trial lessons. However, in order to persuade teachers to employ this method, it is important to explain why it is useful, especially because most teachers have insufficient PCK. Therefore, I consider a student model for informatics education in order to discuss how learners acquire domain-specific knowledge and how they utilize views, ways of thinking, and problem-solving strategies. Based on the model, I improve the previous design framework for e-learning game materials in information studies. Concurrently, I revise one of our e-learning materials.

## **KEYWORDS**

Information Studies, Design Framework, Gaming Material, E-learning, Student Model, Gaming Simulation

## **INTRODUCTION**

### ***The Need for Establishing New Subject Pedagogies or Information Studies***

In recent years, educational reform has been progressing rapidly in many countries, aimed at cultivating students’ twenty-first century skills (Partnership for 21st Century Skills 2009). These efforts have highlighted the need for informatics education because, today, people are required to solve everyday problems more efficiently using information and communication technology (ICT) and maintain safety from cyber threats. As proposed by UNESCO (2002), there are many types of informatics and other related curricula: curricula conducted by independent subject area, latent curricula conducted in each existing subject area, vocational education on ICT, and so on. Each country adopts one or more types of curricula depending on the purposes and

conditions of the educational system in that country.

In Japan, informatics education is imparted through the compulsory technology subject area of Industrial Arts and Home Economics, in particular, through the topics of Information Technology in lower secondary school and Information Studies in upper secondary school. However, the time allocated for the subject Industrial Arts and Home Economics is 175 hours, of which only 25 hours are allotted to the topic of Information Technology, and the time allocated for Information Studies is only 70 hours. According to the National Course of Studies (NCoS), students are expected to learn how to utilize ICT for problem solving in other subject areas by applying their learning in these subjects to the field of informatics education. Toward this end, the Ministry of Education, Culture, Sports, Science and Technology (MEXT 2000) categorized the objectives of informatics education as follows: (1) ability to utilize ICT for problem solving, (2) scientific understanding of ICT, and (3) students' attitudes as members of the information age. Objective (1) is expected to be included in the lessons plans for each subject area, and objectives (2) and (3) are expected to be achieved through the specific topics included in informatics education.

However, there exists a gap between the current situation of informatics education in schools and the expectations of MEXT. Since the topic of Information Studies is a newly established subject area (started in 2004), the teachers teaching it are merely migrants from other subject areas such as mathematics, science, and vocational subjects; further, the method of instruction for this topic has not yet been thoroughly studied. Currently, teachers emphasize aspects such as computer/software operation, multimedia design, making presentations, holding discussions after online research, or other activities like memorizing the latest technical knowledge and judgment rules for cyber safety and ethics. Consequently, the Central Council of Education (2008) has pointed out that the existing instructional method for Information Studies does not cultivate the students' problem-solving ability.

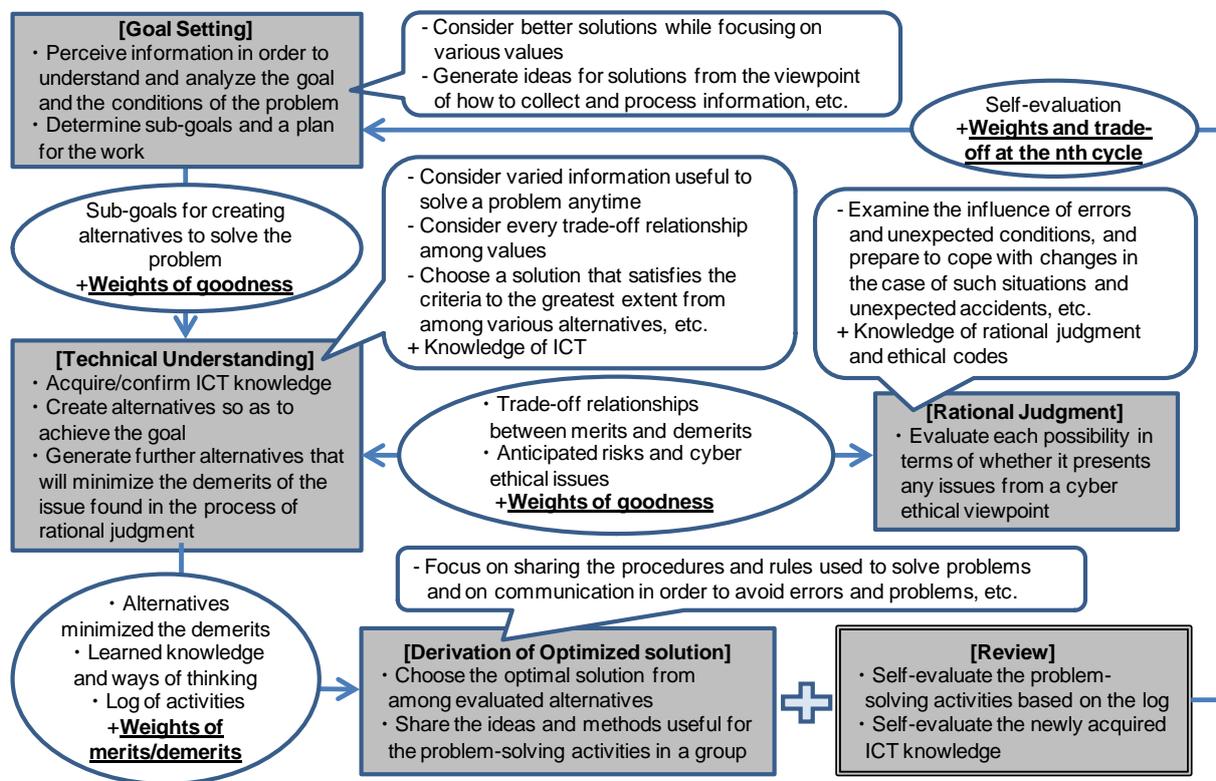
In addition, the Japanese teacher promotion program to become secondary school teachers emphasizes content knowledge (Stern & Matsuda 2010). Therefore, teachers tend to think that the lesson's objectives are sufficiently met if they instill the requisite knowledge or offer activities that simulate the daily context. The objectives of education have changed from providing knowledge to developing intellectual skills, but teachers lack the pedagogical training to help students effectively meet this goal. Their approach should consider the model of cognitive process, as well as the relationship between this process and the knowledge, rules, procedures, values, ethical codes, etc., that students are expected to learn.

### ***Our Research on a Design Framework of Gaming Materials for Information Studies***

To improve the current situation of information studies instruction in schools, my team has researched the construction of a design framework of gaming materials (Figure 1), while simultaneously developing some games and confirming their effects (Hirabayashi et al. 2011, Hirabayashi & Matsuda 2011, Matsuda et al. 2012). Our framework has the following features:

- It was constructed to integrate Tamada and Matsuda's (2004) method for cyber ethics education with Matsuda's (2003) method for informatics education. The former teaches cyber ethics judgment based on a combination of three types of knowledge, proposed by Murai (1987), for general moral education, while the latter teaches 13 items of informatic and systematic thinking when using ICT in problem solving.
- It consists of four sub-processes for problem solving and one for reflection, as shown by the rectangles (Figure 1): goal setting, technical understanding, rational judgment, derivation of optimized solution, and review. The first four sub-processes correspond to those of the design process students are required to learn, as per the technological literacy standards (International Technology Education Association: ITEA 2007).

- It clearly shows students where each of the 13 items of informatic and systematic thinking and the three types of knowledge should be utilized in the task of problem solving (balloons in Figure 1).
- It renders the entire process into a cycle in order to offer students the opportunity to solve similar problems under various conditions. It also introduces the challenge of flexibility, whereby students can apply their skills to changing circumstances.
- It assesses the manner in which students demonstrate sufficient knowledge of ICT, how they harness informatic and systematic thinking, and their consideration of the range of merits/demerits involved in the problem-solving process, as well as the weights and trade-off relations among merits/demerits when evaluating various possible plans. For this purpose, the game remains as the underlined elements in Figure 1 to the variables, and these elements are examined to ascertain whether the weights are consistent with the students' evaluation of each idea in the review process.



**Figure 1**

*Hirabayashi and Matsuda's (2011) design framework of the e-learning game materials for information studies.*

On the other hand, Matsuda (2013) is currently developing a student model of a virtual lesson game for technology education. This model will be used to generate learners' responses to a teacher's decision in a game. However, if we were to consider that the design framework suggests the ideal model of learning outcomes, we will notice some common features between the student model and the design framework. I consider the usefulness of revising our design framework based on the student model in order to clarify the kind of cognitive activities required to prompt learners in gaming materials, as well as the reasons for this.

## PURPOSE

In this paper, I discuss a student model for information studies in order to discuss how learners acquire domain-specific knowledge and how they utilize views, ways of thinking, and problem-solving strategies. Based on the model, I improve Hirabayashi and Matsuda's (2011) design framework of e-learning game materials for information studies. Concurrently, I revise one of their e-learning materials.

## **CONSIDERATION OF A STUDENT MODEL BASED ON THE DESIGN FRAMEWORK**

Bruer (1993) introduced Perkins and Salomon's (1989) theory of intelligence and claimed that domain-specific knowledge, meta-cognitive skills, and general strategies are all elements of human intelligence and expert performance. On the other hand, Matsuda's (2013) student model consists of domain-specific knowledge, views and ways of thinking, and knowledge of problem-solving scripts. Views and ways of thinking help students control the direction of problem-solving activities and self-learning, which are then associated with meta-cognitive skills, although these remain distinct from one another. Bruer (1993) illustrated a variety of different general strategies ranging from study skills to means-end analysis (Newell & Simon 1972). On the other hand, Matsuda adopted Hirabayashi and Matsuda's problem-solving processes of the design framework as a problem-solving script. The reasons for and details of the student model are discussed in this chapter.

### ***Script Knowledge of Problem Solving: As General Strategies***

Although many may consider general strategies too broad to teach explicitly, Bruer noted that they cannot be transferred easily without "informed" instruction. Here, it is important to consider whether informed instruction should be imparted inductively or deductively. For this reason, I adopted scripts (Schank & Abelson 1977) as general strategies. Scripts are sets of procedural knowledge that represent appropriate behaviors for situations or places, such as in a restaurant. Acquiring this type of knowledge depends upon situations; however, when learning in a new situation, some individuals gradually generalize, while others acquire knowledge based on each situation. Therefore, it is necessary to consider the trade-off between experiential learning and explicit instruction.

I consider Hirabayashi and Matsuda's problem-solving process to be necessarily acquired as script knowledge in information studies. This process corresponds to the design process described in the ITEA (2007); then, it follows that this process might be applicable to science, technology, engineering, and mathematics (STEM) education, in general. However, Katto and Matsuda stated that in order to conduct collaborative problem-solving activities, the process of consensus building should sometimes be added after the process of derivation of the optimized solution. Matsuda (2013) also pointed out that there are many different problem-solving processes. Therefore, I propose to understand that the script knowledge of problem solving has a hierarchical structure. Then, we can introduce a mechanism by which to integrate two different scripts into one or to generalize one script from many situation-oriented ones. Moreover, this allows a script to execute recursively, for example to understand the task collecting information in a goal setting process as a sub-problem and execute this task recursively, using the script knowledge of problem solving. On the other hand, it is possible to define many different scripts that can control how we can use lower level scripts corresponding to the script knowledge of each sub-process. In this case, upper level script knowledge plays the role of meta-cognitive skills controlling the execution of lower level scripts.

### ***Informatic and Systematic Views and Ways of Thinking: As Meta-Cognitive Skills***

Meta-cognition consists of meta-cognitive knowledge and meta-cognitive activities (Sannomiya 1996). The

former refers to knowledge of one's good/poor problem-solving methods and the appropriate application of a method to each situation. Meta-cognitive activities consist of monitoring and control. Monitoring involves evaluating present states, perspectives, and problem-solving results, while control involves conducting goal setting, planning, and improvement of activities. This explanation calls to mind the fact that upper level script knowledge plays the role of meta-cognitive skills controlling the execution of lower level scripts, as previously mentioned. Moreover, the informatic and systematic views and ways of thinking that are explicitly embedded in each process of script knowledge also control the tasks in each process. Therefore, I consider there to be different types of meta-cognitive skills.

Matsuda (2003) pointed out that informatic and systematic views and ways of thinking are deeply associated with 12 "recurring concepts," as identified in the Computing Curricula 1991 of ACM/IEEE-CS Joint Curriculum Task Force (1991); these concepts frequently emerge in discussions on a computer science curriculum. The 12 recurring concepts contained many items that are similar to the core concepts required to be taught at the ITEA (2007). In this study, I emphasize views and ways of thinking for the following reasons.

First, views and ways of thinking are procedural and suitable for explicit instruction. For example, to date, I have not met any student teacher who reported learning "recurring concepts" in a computer science class. Second, views and ways of thinking are easy to clearly show where they should be explicitly utilized in each process, as Hirabayashi and Matsuda's framework showed. Third, since mathematical views and ways of thinking are typical examples—because they correspond to the operations used to transform the representation of a problem sequentially and prospectively—they provide a framework by which to solve a problem from different perspectives. Based on these three reasons, I argue the necessity for informed instruction on the utilization of views and ways of thinking in connection with tasks in the script knowledge of problem solving.

What remains of importance is the relationship between views and ways of thinking and the domain-specific knowledge required to utilize them. For example, people need to have knowledge of the good points of results and the methods of problem solving in order to utilize one aspect of informatic and systematic views and ways of thinking, that is, "consider many good points."

### ***Domain-Specific Knowledge***

Domain-specific knowledge is modeled by means of the semantic network (Collins & Quillian 1969). Since long-term memory is not lost but only temporarily unavailable, the student model has to be able to explain how this knowledge can be activated and utilized.

Toward this end, first, Matsuda's model emphasized the chunking of knowledge like frame (Barr & Feigenbaum 1981). The model also assumed that if students recognize the importance of chunking, they might learn a mechanism by which to acquire all related knowledge by themselves, maybe by using views and ways of thinking as study skills.

Second, the reconstruction of acquired knowledge for changing the direction of connection—both among different types of knowledge and between knowledge and situation—is very important. In general, domain-specific knowledge is taught using a buildup approach. However, in real situations, people do not use knowledge in this order. Therefore, students need to have the opportunity to reconstruct knowledge in a manner analogous to real life situations, or they have to learn knowledge in a real situation.

Third, the strength of knowledge connections is important. Matsuda's model applied Keller's (1987) ARCS (attention, relevance, confidence, satisfaction) model of motivation to explain the strength of connections. For example, relevance is heightened by emphasizing reasons and situations that require the activation of specific types of knowledge; further, experience of the appropriate uses of knowledge to achieve the goal should heighten confidence.

## REVISION OF THE DESIGN FRAMEWORK AND E-LEARNING MATERIAL

Based on the discussion so far, I improve Hirabayashi and Matsuda's design framework as well as an e-learning game material. Hirabayashi and Matsuda developed three games corresponding to the first three of four units in "Information Study for Participating Community." For the purpose of this study, I use the "Designing an Effective Presentation" game, developed for Unit 1. Many teachers have conducted ineffective lessons in this unit, and Matsuda and Tamada (2012) consequently used this unit as an example of a virtual lesson game.

### *Goal Setting Process*

In the previous design framework, the purposes were to understand and analyze the goal and the conditions of the problem, and to determine sub-goals and a plan for the work. Therefore, informatic and systematic views and ways of thinking such as "consider better solutions while focusing on various values" and "generate ideas for solutions from the viewpoint of how to collect and process information" were expected to be utilized. The design process of the ITEA (2007) and the problem-solving process defined in the NCoS guidebook have corresponding sub-processes. In addition, in a mathematical problem-solving process, this process corresponds to the sub-process of generating mathematical representation of the problem in the real world.

Therefore, in this process, a mission is provided as an input in the form of an ambiguous expression; learners are required to define the good points of solutions and alternatives and constraints as outputs, such as available information and time restrictions. In order to generate outputs from inputs, learners need to perform a series of tasks while focusing on the appropriate and efficient use of ICT. However, to do this, it is very important to choose an appropriate problem setting in order to focus learner's activity on achieving the learning objectives of informatics studies.

For example, in the case of designing presentation slides, whether students can determine the theme, content, and materials freely or whether they can only arrange some of them according to specific purposes and constraints will affect the necessary tasks they are required to perform not only in this process but in other processes as well. The original game material adopted the latter condition—of arranging according to purposes and constraints—and the scenario was to allow students to make presentation slides by summarizing the report they wrote themselves. Finally, they had to make a presentation in front of all the school students. This scenario has an additional condition; the presentation slides will later be published on the web site. These conditions are closely connected to the objectives of this unit. Students learn the differences in property between materials and information; for example, information is easier to duplicate and convert than materials, but it is necessary to consider the protection of copyrights and confirmation of credibility. Therefore, students should learn methods to increase the efficiency of problem solving by reusing and converting information appropriately. If students have to consider the content in the slides, it will take them too much time to repeat the problem-solving cycle. Moreover, although students may pay attention to content design because they consider it to be important when evaluating each other's presentations, this point is not very closely associated with the utilization of ICT.

Related to the above issue is the fact that the domain-specific knowledge studied in this unit is limited to differences in properties between materials and information, features of digital information, digitization of numerical-values/characters/images/sounds, input devices of varieties of information, process of problem solving, and multimedia design. Devising expressions of language, images, or sounds, and mastering presentation skills do not form part of the content in this subject area, but these skills should be learned in other subject areas. However, many teachers inadequately emphasize the importance of these skills in their lessons, especially in the exercises contained in this unit.

Therefore, in the new design framework, after listing down all the possible tasks, it is necessary to discriminate between tasks that are appropriate and inappropriate for information studies. This helps to eliminate lessons that are inappropriate for this subject area. Similarly, it is important to distinguish between the domain-specific knowledge necessary to be learned in information studies and the knowledge that depends on a specific mission, which can then be forgotten after the mission is achieved.

In addition, teachers can instruct students on problem-solving techniques—such as brainstorming and the Kawakita Jiro (KJ) method—to be used as general strategies and the domain-specific knowledge concerned with examining reliability of information and cultivating media literacy. However, although the former is useful for this unit, the latter is more useful after studying the properties of communication and network technology, which comprises the subsequent unit.

As main tasks in this process, students gather information to clarify the problem, that is, they utilize information to reduce the ambiguity of the problem, and they formulize objectives and constraints of the problem based on the information gathered. Students utilize methods for divergent thinking in order to imagine expected objectives and constraints, as well as information to confirm those expectations. On the other hand, students also utilize a method for convergent thinking in order to arrange gathered information. All these tasks require students to consider the practical use of ICT. Required information and its collection methods are the sub-problems that need to be solved recursively by means of the same problem-solving cycle. This enables the cyclic repetition of a game material on a small scale.

Finally, because the outputs of this process are not alternatives but good points and constraints—instead of informatic and systematic views and ways of thinking, as in the previous framework—the following views and ways of thinking are necessary for used in this process: “considering various good points,” “considering the trade-off relationship among various good points,” and “understanding problems from systematical perspectives.” Moreover, in order to clarify these, it is necessary to use the option of “considering varied information useful to solve a problem anytime.”

### ***Technical Understanding Process***

In the previous design framework, the aims of the Technical Understanding process were to acquire or confirm ICT knowledge, create alternatives by which to achieve the goal, and generate further alternatives that will minimize the demerits of the issue found in the Rational Judgment process. The design process of the ITEA (2007) and the problem-solving process defined in the NCoS guidebook have corresponding sub-process. Therefore, it is necessary to use informatic and systematic views and ways of thinking such as (1) “consider varied information useful to solve a problem anytime,” (2) “consider every trade-off relationship among values,” and (3) “choose a solution that satisfies the criteria to the greatest extent from among various alternatives.”

Since the output of the previous process turns into the input for this process, students need to generate two or more alternatives that will fulfill the constraints of the problem and achieve the objectives satisfactorily. However, in this process, students are not required to pay attention to constraints but need to focus on achieving objectives better by using divergent thinking, mainly because the constraints are examined in the Rational Judgment process.

In the Technical Understanding process, instead of only using pre-acquired knowledge, students are expected to investigate new technology in order to conceive a solution. At this time, they need to use option (4)—“considering varied information useful to solve a problem anytime.” If students try to gather information in order to use new technology, the same problem-solving cycle can be performed recursively as a sub-process, as in the Goal Setting process. However, when there are time restrictions, students need to determine whether to use new methods or conceive alternatives from known methods by examining the trade-off relationship between pursuing goodness of results and avoiding the risk of time running out. Although many Japanese teachers allow

students to perform practice sessions without any time restrictions and compliment their efforts, this tendency may result in problems like overworking in the workplace. It is important for a company to improve productivity, and ICT is usually employed to meet this goal. One possible reason that the educational use of ICT has not advanced in Japanese schools is teachers' misconceptions about ICT.

Because the purposes of the Technical Understanding process are to conceive alternatives —instead of informatic and systematic views and ways of thinking (1), (2), and (3) in the previous framework—following views and ways of thinking will be useful; “generate ideas for solutions from the viewpoint of how to collect and process information”; and “recognize that there are always two or more alternatives such as using or not using ICT.” Furthermore, when an improvement to an alternative is required after examining in the Rational Judgment process, “considering new ways to solve problems with utilizing ICT in the situations and fields that people consider to be difficult to solve” should be utilized.

With regard to the “designing an effective presentation” game, the previous game asked students to choose one of following choices for each slide: (a) use only text data in the report; (b) use newly collected or created data, including and other than text; and (c) use the functionalities of PowerPoint, such as word art, auto shape, animation, table, graph, macro. If students tried to use a new functionality, they were assessed on whether or not they had understood the usage of that functionality. If they did not understand it correctly, they would fail the game.

In the new game, I retained the above basic policy; however, the previous game does not assume to utilize report data with conversion. As already mentioned, the objective of this unit is to convert and reuse information by focusing on its merit. Therefore, I suppose that there are various types of data in the report, and then I raise the level of difficulty by increasing the choice of data and alternative methods of its conversion according to the repetition of the cycle. Moreover, to increase the difficulty level, my revised game requires students to consider problems associated with copyright protection and cyber ethics.

The tasks included in this process are closely related to the tasks in the Rational Judgment process. However, in the previous game, the tasks in these two processes were not at all connected. In addition, although the design framework included a task that had to be performed after returning from the Rational Judgment process, the previous game did not include this task because of the independence of these two processes. Therefore, I needed to add a task, for example, because there is a possibility of copyright infringement if students use the image data in the report and publish it on the web site. Therefore, they need to consider how to improve this alternative by maybe switching to other image data or texts, obtaining consent for use of the image data, and so on.

### ***Rational Judgment Process***

In the previous design framework, the purpose of the Rational Judgment process was to evaluate each possibility in terms of whether it raised any cyber ethical issues. Therefore, it was necessary to use informatic and systematic views and ways of thinking such as “examining the influence of errors and unexpected conditions and preparing to cope with changes in the case of such situations and unexpected accidents,” and “knowledge of rational judgment.” Although the design process of the ITEA (2007) has corresponding sub-processes, the problem-solving process defined in the NCoS guidebook does not have any sub-process.

The Rational Judgment process was set to integrate the method of “three types of knowledge” for cyber ethics education into the method for informatics education, which emphasizes the utilization of informatic and systematic views and ways of thinking for problem solving. Therefore, in this process, it is important for students to consider how to utilize ICT effectively, while simultaneously avoiding the negative influences of ICT use. As mentioned previously, the task for improving the alternatives is performed in the Technical Understanding process. However, sub-goals for improving each alternative should be considered in the Rational

Judgment process because these sub-goals focus on why the alternatives should be improved. To meet these ends, students need to follow informatic and systematic views and ways of thinking that are additional to those utilized in the previous framework: “considering the trade-off relationship among various good points”; “considering good points should be changed according to situations and decision-makers”; and “considering the clarification of a procedure and sharing of a rule in decision making to avoid problem.”

As mentioned in the previous section, this process asks students to critically examine “a good alternative” that was generated in the Technical Understanding process. However, in the previous game, these two processes had no association, and the problems that occurred in the Rational Judgment process were completely unrelated to the alternatives conceived in the Technical Understanding process. Therefore, in the new game, I put forth a problem related to copyright infringement, as mentioned in the previous section. I also added yet another problem: when faced with time restrictions, how do students evaluate trade-off relations between giving up and not designing better slides, and taking the risk of time running out and not finishing the work but designing better slides.

### ***Derivation of Optimized Solution Process***

In the previous design framework, the purpose of the Derivation of Optimized Solution process was to choose the optimal solution from among various evaluated alternatives and share the ideas and methods useful for problem-solving activities in a group. The following informatic and systematic views and ways of thinking are expected to be utilized: (1) “focusing on sharing the procedures and rules used to solve problems and communication in order to avoid errors and problems”; (2) “choosing a solution based on evaluating the good points”; and (3) “making a decision by being aware of one’s own responsibility for the results and its influences on other people.” Although the design process of the ITEA (2007) has corresponding sub-processes, the problem-solving process defined in the NCoS guidebook does not have any sub-process.

In the framework for the previous game, students were required to perform few tasks in this process, and they were provided with feedback messages for their choices in each process. This was because the alternatives were listed as choices in the Technical Understanding process, and students were asked to select one alternative in that process.

In the new design framework, to avoid this contradiction, all alternatives that satisfy constraints in the Technical Understanding process become the inputs for the Derivation of Optimized Solution process. Moreover, I define the task of this process as choosing the best alternative as the solution, while using views and ways of thinking such as “considering trade-off relationship among various good points,” as well as (2) and (3) from the previous framework. The solution and reasons for its choice become the outputs of this process. In addition, to evaluate consistency, students are asked why they did not choose other competitive alternatives. Furthermore, in the new design framework, sharing of useful ideas and methods is moved to the Reflection process.

### ***Consensus Building Process***

This process constitutes a new addition to the game, but it is not always required. Neither the design process of the ITEA (2007) nor the problem-solving process in the NCoS guidebook mentions a corresponding process. The purposes of this process are to explain the solution that a student judges to be optimal toward decision-makers and to ask for a decision when the student is not the only decision-maker.

It should be mentioned that the aim of this process is not to insist on one’s own proposal. First, in the Goal Setting process, it is important that students investigate which good points other decision makers consider important. Second, in the Rational Judgment process, students should try to modify alternatives by paying attention to various good points other than the ones they consider important. Third, in the Derivation of Optimal

Solution process, the students' reasons for choosing the solution should be rational. Finally, in the Consensus Building process, if another student comes up with a better proposal, then students should agree to that solution. For example, even if students try to gather information in the Goal Setting process, there is a possibility that the decision makers would not have determined the weights of the good points; then, there is a high possibility that a person's proposal will not be adopted. Moreover, in such case, if two or more persons propose alternatives, it might be better to choose a unique solution instead of those proposed in the Derivation of Optimal Solution process.

### Review Process

Although the problem-solving process in the NCoS guidebook contains the "Evaluation of the Result" process, the design process of the ITEA (2007) does not have a corresponding process. This process is very important in the simulation and gaming method as well as in Hirabayashi and Matsuda's design framework, because learning is not expected to be undertaken during the game plays but during the Review (debriefing) process. Therefore, it is important for learners to repeat the cycle twice or more within a short period.

In this process, students should be prompted to self-evaluate their activities in order to improve the utilization of views and ways of thinking based on the logs; students should also reconstruct domain-specific knowledge by choosing useful information that should be memorized. The previous design framework did not take into account the reconstruction of domain-specific knowledge; however, according to the student model, it is very important to promote the activation of knowledge in appropriate situations.

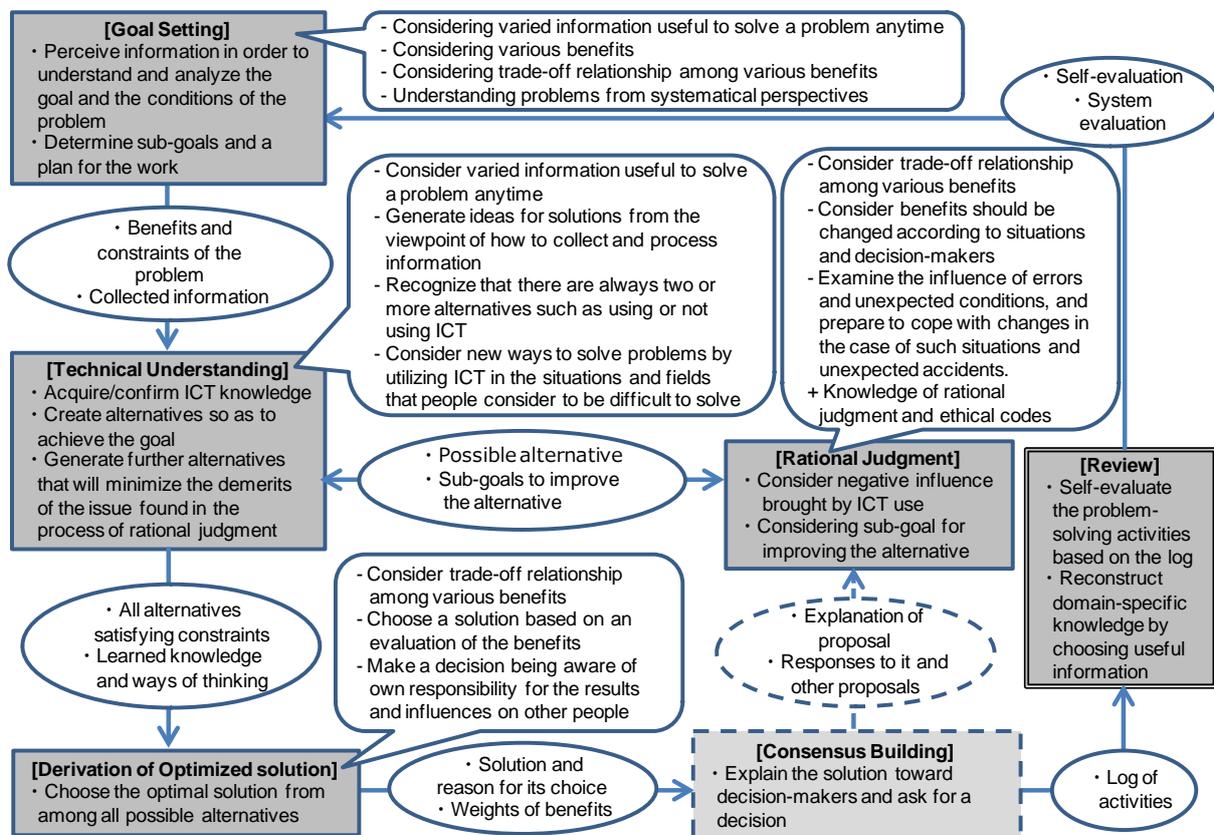


Figure 2

Revised design framework of the e-learning game materials for information studies.

## FUTURE PERSPECTIVES

In this paper, I discuss a student model for informatics education in order to examine how learners acquire domain-specific knowledge and how they utilize views, ways of thinking, and problem-solving strategies. Based on the model, I improve Hirabayashi and Matsuda's design framework of e-learning game materials for information studies. Concurrently, I revise their "Designing an Effective Presentation" game.

By way of future research, I aim to conduct experiments using the revised game to determine the effects of this revision. Moreover, I will analyze the logs of students' activities to examine the validity of the student model and make suggestions for its improvement and refinement. Furthermore, I will use this game to explain the student model in a teacher education course in order to confirm the game's effects in facilitating improvement in teachers' lessons.

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Title: **The poisoning cancer core higher and university education in sub-Saharan Africa; case of the democratic republic of Congo**

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Description: **Cancer is poisoning In Some ways the anti-values that we find in higher and university education in DR Congo, Africa and the world, this article Attempts data causes and the remedies of the cancer, for particle DR Congo and the countries of sub-Saharan Africa**

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**Abstract:** Cancer medicine compared to the national education in DR Congo from primary school to university. This work Attempts to find the root of the cancer, to give the deep causes and ways to remedy this, a survey of the struggle against the anti-values Conducted by the Ministry of Higher Education, University and Scientific Research (ESURS) allowed us to Participate Whose recommendations are Discussed and Proposed. Criteria: such as: overall score, education and research, industry revenues and the international visibility to less and less Decreases come to disappear for DR Congo Without any worry. The DR Congo MIN.ESURS of UNESCO, the World Bank, All which continued to fight against anti-thesis gains should Regulate the payments and interest of teachers encourage students to excellence in scholarship, publish the moral values of Each teacher and educate students, teachers and administrative staff.

**Keywords:** higher education, DR Congo, ant value, decline.

# The poisoning cancer core higher and university education in sub-Saharan Africa; case of the Democratic Republic of Congo

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## **Abstract**

*Cancer medicine compared to the national education in DR Congo from primary school to university. This work Attempts to find the root of the cancer, to give the deep causes and ways to remedy this, a survey of the struggle against the anti-values Conducted by the Ministry of Higher Education, University and Scientific Research (ESURS) allowed us to Participate Whose recommendations are discussed and Proposed. Criteria: such as: overall score, education and research, industry revenues and the international visibility to less and less Decreases come to disappear for DR Congo Without any worry. The DR Congo MIN.ESURS of UNESCO, the World Bank, All which continued to fight against anti-thesis gains should Regulate the payments and interest of teachers encourage students to excellence in scholarship, publish the moral values of Each teacher and educate students, teachers and administrative staff.*

**Keywords:** higher education, DR Congo, ant value, decline.

## **1. Introduction**

Anti-values that grow by proliferation and kill the leadership of social integrity. In schools and universities institutions, they have made a strong decrease of civil society and incompetence in professional life. It's possible to find the source, the causes of this so-called cancer poisoning harm and propose means of combating it.

This survey tries to give a modest contribution to the broadening of reflections on anti-values in higher and university education as a good university is an appropriate framework for education in democratic values. "We cannot change the world without turning men." So the nation ales and international conferences, journals and annual reports on anti-values in higher education in DR Congo and Africa have allowed us to have this story. Despite this, the entities and the international visibility of higher education and university disappear less for sub-Saharan Africa.

In a first point, we try to present and briefly describe and gradually the root of this cancer (anti-value), which is an obstacle to development. Problems that are caused by this cancer from the viewpoint education, politics, society, etc... in the national and international environment will be related in the second point. The third point is mainly focused on the technical and remedies to fight against these scourges (cancer virus) in higher and university education.

An educational reform is always the goal and proof of social transformation. This study describes: the root of the cancer, the root causes and strategies to fight finally have a positive 2020 for the emerging nation.

## **2. Methodology**

Cancer, comparing it to that of National Education of the Democratic Republic of Congo is defined as beginning anti-value lowest (family, kindergarten and elementary school) and develops in the mind of the person.

This cancer is a malignant tumor that lies in the core of education. "A fish begins to rot at the head and not the tail"<sup>1</sup> "so this root comes only from the family (parents), institutions (schools and universities) and policy makers (the country's authorities, academia, the instructors). In DR Congo, cheating starts with the head. From independence to date, no stability of institutions is only possible conflicts and wars that influence cancer.

- This cancer is produced by:
- Interethnic conflicts
- The lack of a patriotic spirit
- Tribalism in higher and university education.

The majority practitioners of anti-values are better organized and plan a more education that research.

Currently in DR Congo, democracy is not applied, the non-compliance handbook (university constitutions), human rights either, this is just a slogan.

Congolese universities (Université Nationale du Zaïre time now University of Kinshasa, ISC, ISTA...) who were counted among the great universities of the world through its diplomas come with more features, but these degrees are now challenged even in other countries in Africa. This decrease does not bother anyone.

Many sources are in corruption among teachers, school authorities and students. Cheating, sexual violations in schools, sexual harassment practiced between teacher and student finally ensure the success of the student who lack money: are current practices (Sexually Transmitted points). Recommendations from colleagues, but they are used as an act of placing or place themselves under the protection of someone said "I have a Nganga"<sup>2</sup>. Boys may umbrellas if they have money, about the girls, they do leave for lack of means. But it is more deplorable is that the Congolese institutions is that the people who practice it are well known by students and colleagues their own service (teachers, academic or administrative authorities) but they are not punished. Students who are not excluded and not punished, instead they are the ones who practice it more successful and become wizards. Those who force themselves to work on their own intelligence are excluded or NAF (not allowed in the faculty).

The student does not have the ability to acknowledge a teacher in practice; such an accusation is not considered and pursued by the authorities. As we have said, "a fish only begins to rot from the head ...". So this phenomenon originated from the authorities. Some authorities to maintain this, many committee members are changed if they are in line to fight against these anti-values.

Students (pupils) are harassed by teachers, since in doing so, they will be provided in class. For a position, begins corrupting the summit.

Some questions we ask:

- This practice isn't rape made the woman?
- Associations of women do not want them on this?
- Human Rights and those of women ill-treat cannot take solution?
- Teachers in practice they may not to worry?

The answers to these questions will study several researches finally fight against cancer.

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<sup>1</sup> Natural Observation by housewife

<sup>2</sup> Username language Lingala (Congo DRC) who means clustering magician or sorcerer

An assumption of the professionalization of higher and university education in the Democratic Republic of Congo is characterized by different ways in which the roots of this can turn into cancer: the proliferation of tomorrow's world with the term "bribe";

### *2.1. How to straighten weak level development of our higher institutions?*

Indeed, knowledge is a set of scientific and technical data that is acquired through research and experience<sup>3</sup>.

Tertiary institutions in the Democratic Republic of Congo suffer from inadequate equipment in table 1 below explains.

*Table 1: Capacity and actual enrollment in public institutions in Kinshasa 1989-2000<sup>4</sup>.*

	Capacity (Assize places)		Students effective				
	Initial 70/71	Real in 99/2000	89/90	90/91	98/99	99/00	Utilization
<b>UNIKIN</b>	5000	10150	10452	12525	31387	34526	240
<b>ISTA</b>	3591	13000	5169	5815	10449	14460	11
<b>INBTP / ISAU</b>	1616	1134	2488	3093	2481	2210	94
<b>ISTM</b>	1532	*	2515	2728	4726	5409	253
<b>ISC-KIN</b>	1572	5194	6303	11112	15980	15919	206
<b>IFASIC</b>	115	*	361	380	1038	1119	87
<b>ISAM</b>	115	325	115	192	770	863	165
<b>INA</b>	149	*	149	223	476	791	43
<b>IST-ABA</b>	269	100	481	499	736	854	754
<b>UPN</b>	3544	8456	5811		10312	11065	31
<b>ISP / GOMBE</b>	453	965	859	848	1084	1603	66
<b>ISPT / KIN</b>	50	314	50	366	328	399	27
<b>Total</b>	<b>18006</b>	<b>39638</b>	<b>34753</b>	<b>37781</b>	<b>79767</b>	<b>89218</b>	<b>111</b>

*Table 2: Level of training between public and private institutions*

Establishment	% Of students in the DRC	% Of teachers in schools	Level of training (theory and practice)
<b>Public institutions (ISTA, ISC, ISP ...)</b>	25%	40% of teacher, 60% of CT and Assistants	Average (55% theory, 30% practice)
<b>Private institutes (ISIPA ...)</b>	10%	10% prof, 90% of CT and Assistants	Low (45% theory, 40% practice)
<b>Public universities (UNIKIN, UNILU, UNIKIS ...)</b>	50%	70% of teacher, 30% of CT and Assistants	High (60% theory, 20% practice)
<b>Private universities (USK, ULK ...)</b>	15%	15% of teacher, 85% of CT and Assistants	Average (55% theory, 40% practice)

As regards the level of training, we present the theory, practice and the rest percentage is for personal research students.

One constant is that in public institutions, we note that the personal search for each student is 15% on the 55% theory and 30% practical. As institutions private institutions, there is a balance between theory and practice for the 45% and 40%, having 15% of personal research.

For public universities, with its high training among institutions in the country has 60% theory, 20% practice and keeps 20% of personal research. And as for private universities,

<sup>3</sup> La professionnalisation de l'enseignement supérieur et universitaire au Zaïre ; option des utilisateurs du secteur de l'enseignement secondaire. p12

<sup>4</sup> Le système éducatif de la république démocratique du Congo, priorités et alternatives, p123

in part, they retain 55% of theory, 40% practice and 15% for individual research of each student.

These ideas are not exhaustive because:

Institutes and public universities, academic costs are lower, the democratization of scientific body, which is why we find more teachers (those who can maintain the integrity of education), and Assistants or Head Works.

While in private institutions, scientific bodies are motivated, academic fees are higher than public schools.

Table3: Balance of public and private institutions.

Public Institution	Private property
<b>Academic fees is least expensive</b>	Academic fees costs isn't least expensive
<b>Teachers are not motivate</b>	Teachers' motivations
<b>Difficulty of exchange of the teachers</b>	Easiness of exchange of the teachers
<b>Over theories than practices</b>	Under theories than practices
<b>Dispense a strong and distinct education regardless of income</b>	Exemption low education taking into account income
<b>More professors (Ph.D) that wizards and Heads of work</b>	Low professors (Ph.D) that wizards and Heads of work

## 2.2. Subsidy funding and the Education

The composition of public education expenditures (including expenditures central and local government and foreign aid), shows that investment in higher education is very low in the order of 2%

Table 4: The evolution of public expenditure (World Bank)

	2005	2006	2007	2008	2009	2010	2015
<b>Total public expenditure (millions of CF)</b>	<b>190044</b>	<b>232828</b>	<b>244296</b>	<b>277809</b>	<b>315514</b>	<b>303284</b>	<b>509158</b>
<b>Total public expenditure (\$ million)</b>	<b>514</b>	<b>629</b>	<b>660</b>	<b>751</b>	<b>853</b>	<b>820</b>	<b>1376</b>
<b>Composition of public expenditure dies (%)</b>							
<b>Common</b>	33%	37%	49%	55%	63%	73%	71%
<b>Staff</b>	22%	21%	25%	24%	24%	28%	30%
<b>Non-staff</b>	11%	16%	24%	31%	39%	45%	41%
<b>Investment</b>	67%	63%	51%	45%	37%	27%	29%
<b>Dice current public expenditure (\$ million)</b>	<b>95</b>	<b>150</b>	<b>219</b>	<b>301</b>	<b>413</b>	<b>450</b>	<b>686</b>
<b>Re partition sub-sector (in %)</b>							
<b>Pre school</b>	0%	0%	0%	0%	0%	0%	0%
<b>Primary</b>	51%	56%	60%	64%	69%	71%	72%
<b>Secondary</b>	33%	31%	28%	25%	21%	19%	20%
<b>Higher mirthful</b>	16%	13%	11%	11%	10%	9%	7%
<b>De think government investment (million \$)</b>	<b>191</b>	<b>260</b>	<b>229</b>	<b>247</b>	<b>243</b>	<b>162</b>	<b>284</b>
<b>Re partition sub-sector (in %)</b>							
<b>Pre school</b>	0%	0%	0%	0%	0%	0%	0%
<b>Primary</b>	85%	87%	86%	87%	94%	94%	52%
<b>Secondary</b>	13%	11%	12%	11%	6%	6%	48%
<b>Higher mirthful</b>	2%	2%	2%	2%	0%	0%	0%

The Congolese government is unconscious for some countries preschool basic support children kindergarten through elementary school. A subsidy is to consider the government of national unity in 2014.

### 2.3. Low intelligence students<sup>5</sup>

This weakness is characterized by the five forms of cheating and two for corruption. For those of cheating, the document states: copy and paste (plagiarism), verification, collaboration or cooperation, missiles or insurance (which could become bombs) and copyright.

Copy and paste: the act of plagiarizing a literary work slavishly for personal purposes. Verification or cooperation refers to the fact for students to communicate the answers during the examination (interrogation, examination or tests). As for missiles, these are pieces of crumpled papers that students are getting quietly during the tests in order to communicate the answers, It become bombs if they are intercepted by the supervisor.

Copyright (not to be confused with the rights granted to the author of a literary, scientific or artistic work fully use revenue from its work of mind) is a form of conditioning students for success in a course upon purchase of syllabus (course), TP or other leaflets summarizing the subjects taught

Regarding corruption in the upper and academic institutions, we are two: the connection or enlisting and hallway (the *suivilogie*<sup>6</sup> or monitoring).

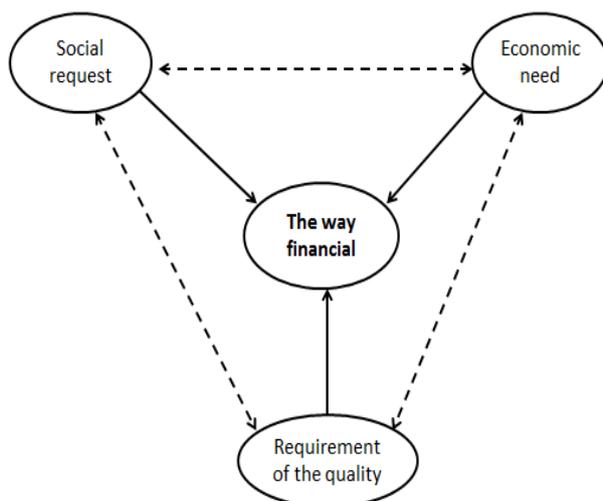
The connection is a practice that is to set up each time after an examination or test question, a list of students seeking points with the teacher of the course holder or his representative, together with a full wrap banknote. The corridor, monitoring or *suivilogie* is a practice of conducting approaches in order to obtain the change in odds poor payment of a sum of money. The existence of an anti-value necessarily involves two people: one who does the action and one that is acted upon. Moral and legal level, both are punishable.

To believe the leaflet Ministry, cheating as corruption has consequences both in terms of its author and of the entire community.

Whoever cheats and corrupts gets a big distinction. While he's an empty shell... This is the case that we find a state-certified unable to write his name or two short sentences properly. But at the community level, corruption and cheating throw discredit on the quality of the training provided in the upper and academic institutions.

### 3. Resultants

#### Structure of a good higher education



The principle simulation of the keys for a better growth of higher and university education for social development element. The first circle is to open access to higher education broadly and as fair as possible. The second is to provide quality educational services both in the field of education than in research. The third tag assumes that the system meets the actual demands, both in quantity and quality, the society and the labor market. The fourth is that the developed structural strategy is fiscally sustainable given the available national resources, external resources that could be mobilized and public cross-offs. Although the demand for quality is difficult to

But if the nation fails to make this concrete

structure, we obtain negative causes such as:

<sup>5</sup> Brochure Ministry of higher university education and scientific research. February 2013, p. 1-2.

<sup>6</sup> Term used by students at the university for to pursue the teacher at last for aid them the points at the course

- The production of several diplomas, but few calcified, because those who practice anti-values remain only empty shells. It's the case that we remark that a baccalaureate unable to write his name correctly é or two short sentences.
- The questioning of our diplomas in Western, same in the resident country. During that they produce Engineers civilians, technicians, builders, architects such as Town planner, but we invite others to come, to fit and modernize the city then that they product each Grad also qualified.
- The difficulty to the market of employment and all that falls on the government. It the case that they remark a Lawyer is unable to make his job, a Management or Marketer unable to create a job.

This is proving the *decay* of higher education and university.

As this is the man that is the basis of all these evils, the only man who can stop, but at or these roots came, we would meet and perform certain rules. We include some *remedies*.

Professor MPEYE Nyango proposes to examine the strengths that the university owns or rather should have to contribute effectively to the promotion of peace in DR Congo<sup>7</sup> and in other countries:

Peace - Democratic - Development = a Dynamic.

A Dynamic = Identifier - Resolving Conflict - Critical analysis solutions.

= University Centre of knowledge production, of thought.

Peace within borders: organization and lived social relations between citizens.

Peace out = border.

= University Partner of the Government and society.

After finding peace in all national borders, we finally propose some technicalities to fight against these anti-values:

### ***3.1. The technicality to uproot this cancer***

This work is not only a responsibility of government; we must all hand in paw. This is a responsibility of everyone: *parents, academic authorities, teachers and administrative staff, students, and the environment.*

#### ***3.1.1. Charge parents***

To protect their child in school is essential. They must be existing bodies function, especially for Parents Committees play a role in monitoring and warning of dangerous behavior manifested in an institution. They should be especially supportive and fight together. Control is often more difficult. Many parents are illiterate, sometimes complex with their children "high" school. Often they are not even concerned about what is happening in their children's schools. Also, parents should as much as possible contact with the institutions to ascertain the behavior of their children.

Parents and academic leaders must be models to be credible. What may be the credibility of a director, a teacher who sexually harasses her students? Who practice favoritism: children watching? And this is not because they tell us nothing they think less.

#### ***3.1.2. Academic authorities***

There is currently a problem in the management of institutions, often reported by the authorities. It is the lack of training on the management of academic institutions; they must manage the pedagogical issues (educational support for students and teachers), financial issues. Often, we find that even the administrative practice of handing back when a change is not made responsible. The lack of

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<sup>7</sup> L'université de l'an 2000 et la vision de la paix en République Démocratique du Congo, p86

monitoring control of students and teachers, through ignorance, consciously or laziness is a multiplication factor of negative behaviors in schools. These officers should receive regular information updates and reminders of their duties.

The knowledge of the rules and conventions, a student community cannot be managed without payment and without compliance. Accustom students to respect the law and regulations; it is still necessary that they are aware of these rules. It is also essential to explain the serious consequences of certain behaviors. Example: the dangers of corruption and cheating in the future life, drugs, alcohol... A child who behaves correctly should be rewarded, the offender shall be punished, and especially it must also know why it is sanctioned.

### **3.1.3. Teachers<sup>8</sup>**

Teachers, given the serious mistakes that some of guilty, we can conclude that there is a lack of training and preparation for business, especially with regard to professional ethics. There is also another, a situation deplorable, consecutive unemployed young graduates.

These pending "having a job" will teach. We thus find agronomists teaching mathematics, citizenship... in college, so they never learned to teach. Teach is to implement a set of practices, techniques that learn to impart knowledge and know-how / be is to respect a number of ethical rules related to trade.

It does not do anything in a class or with students. Individual responsibility of teachers is to take account of course for serious misconduct which some are guilty, but the way they are prepared to exercise their profession is also questionable. A reform of the training of teachers at all levels of education is essential if we want to correct the situation in schools.

### **3.1.4. Students**

Students also are not excluded. Case of students who take the initiative to bribe teachers or academic authorities, sometimes with the complicity of parents. We must also recognize that the way they are trained gives them little openness. Many of their behaviors identified above prove that they take risks for short-sighted interests. Cheat or get pregnant can demolish all his training.

### **3.1.5. The environment**

The student environment is somewhere responsible for indiscipline in schools situations, due to the indifference of the surrounding populations. Indeed, the tenants of pubs nearby establishments hide students who drink pimps, "sell" to young female students, the sales networks of narcotics. We really cannot believe that all these crimes are not seen, recognized by neighbors, relatives ... Is this-the police and the administration does not know?

An impunity environment is a major obstacle in the process of raising a child. *"Impunity is the number one enemy of change"*, because the beneficiaries of impunity does not accept so easily lose its benefits. Impunity gives a pleasant feeling of power and tranquility. Guilt eventually disappears. Fault eventually losing quality fault, the thief finally boast of his exploits thief...

### **3.1.6. The government**

#### **3.1.6.1. Fight against cultural separation from the other cultures has earning**

- Awareness of students and academic staff;
- Respect Vade Mecum (the constitution academic) and its application.
- To put the authorities who have a valid ethical as a member of the committee management and the canal's authority.
- Publish each year the moral values of every teacher and institution.
- Courses and seminary knowledge of the country and the problems of development.

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<sup>8</sup> Ndayisaba Joseph, Negative and antivalues school behavior: the case of Burundi, p12

- Language learning: it is important that at the end of his studies university, each qualified must understand at the least the French and English. Which it musts a revision content and methods of education.
- The initiation other cultures by conference-debate, debate contradictory and democratic, seminary, emissions (medias). And find solutions to conflicts
- Encourage e the students establish organizations of democratic, transparent and actively participate.

### **3.1.6.2. Against the bulkhead regional and ethnic by the mobility**

We find:

- A difficulty of materials essentially of economic order: moving expensive.
- A difficulty é political (ethnic conflict): *geopolitics* ' of turning to the decade 80-90 up to date is accompanied by a sharp rejection of the other removal of *non-nationals*.
- A difficulty security: unrest, wars and rebellions in regions and in the capital.

The State should consider promoting

- The mobility teachings and students by appropriate politic.
- The encouragement to the registration of non-originating;
- Scholarships, excellence's price and travel, etc...
- Consisting of a salary to teachers, personal academic, etc..

### **Conclusion**

Changing habits and practices, especially the poor, is always difficult. In sub-Saharan Africa, are developing a teacher receives a salary unsatisfactory, it can be a major source of this root. Even where the teacher is better paid, corruption is not lacking. The noble profession of a teacher universities, teacher or researcher does not depend on money or result salary, but the passion of the character, because "happiness is not in the goods that we has, but rather in the satisfaction of the portion that is allocated." DR Congo, corruption and anti-values are planned, organized better than teaching and research. Even the authorities recognize.

We see that clearly identified the culprits escape punishment because of support and protection they receive from high persons in the administrative hierarchy, judicial or police. We must accept that we need to change, denounce evil, set goals, milestones, and can provide the effort it takes to achieve them.

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**EXPLORING THE IMPACT OF PROFESSIONAL DEVELOPMENT ON  
ELEMENTARY TEACHERS' KNOWLEDGE AND UNDERSTANDING OF  
GEOMETRY, MEASUREMENT, AND FRACTION CONCEPTS.**

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**Abstract**

*This paper examines the mathematical knowledge of Grades 3-5 elementary teachers during a week-long professional development experience focusing on geometry, measurement, and fraction concepts as described in the Standards for Mathematical Content articulated in the Common Core State Standards of Mathematics (CCSSM). The data were gathered during a one-week professional development project conducted in large school district in the southwest United States, and address the specific sub-goal of increasing teacher content knowledge in geometry and measurement concepts in the Common Core State Standards for Mathematics.*

**Introduction and Related Research**

The professional development project reported on in this paper engaged participants in classroom discourse, effective instructional strategies, and hands-on learning activities to increase their content knowledge of specific Common Core State Standards for Mathematics (CCSSM) content and practice standards (National Governors Association Center for Best Practices, Council of Chief State School Officers [CCSSM], 2010) as part of a long-term effort to increase student achievement. Classroom mathematical discourse

was chosen because of the central role it plays in shaping students' mathematical capacity and disposition (Ball, Lubienski, & Mewborn 2001; Schulman & Schulman, 2004; Stein, 2001). The focus of our research revolved around the following question: What impact does professional development focused on classroom practice related to specific Common Core content and practice mathematics standards affect elementary teachers' content knowledge across those Common Core content domains?

According to Carpenter, Franke, and Levi (2003) the very nature of mathematics presuppose that students must engage in discussion in order to learn mathematics. Lamberg (2013) supports the inclusion of professional development for teachers related to their understanding of, and strategies for encouraging communication of their students as she states, "By focusing on how students can communicate mathematical concepts, both the Common Core State Standards and the NCTM standards naturally support a whole class discussion approach to teaching math." (p.3). An emphasis on communicating mathematically provides students with the opportunity to demonstrate understandings and at the same time alerts teachers and students to possible misconceptions. According to Lamberg (2013), the goal of improving teachers' ability to use communication strategies in classrooms is such that, "Teachers need to understand how classroom discourse will help increase student learning and improve test scores," (p. xiii).

Cave and Brown (2010) emphasize that through communication and discussion students can be given opportunities to examine mathematics through various forms including manipulatives, words, diagrams, symbols, graphs, tables (see, Boaler, 2008). Students can have conversations where they act like teachers by asking questions, rephrasing problems and questions, justifying the reasoning used in their solution strategies, and providing formal or informal justifications to support the validity of their reasoning. Students use higher-order thinking skills when they uncover or discover mathematical principles, concepts, and relationships. To actively facilitate classroom discourse, teachers must have content knowledge in order to know the range of mathematical ideas students may need to work on in a given mathematical problem. Teachers who are aware of multiple paths that lead to appropriate solutions of problems, and know and use strategic questions to guide students down any one of those paths,

assist students in their quest to learn more mathematics and in more depth.

The National Research Council (2001) has characterized elementary mathematics teaching and learning in the United States as too often limited rote experiences that do not boost mathematics thinking. D'Ambrosio, Boone, & Harkness (2004) point out that teachers may have limited content knowledge which may translate into a dislike for more in-depth explorations of mathematics content, such as proposed by the CCSSM, especially that some content was moved to earlier grades in CCSSM compared to prior curriculum arrangements. Weaver and Dick (2009), studying the results of a mathematics leadership institute project, found that after three years of summer institutes, teachers showed significant overall improvements in their content knowledge and “The degree to which the professional development utilized well-defined professional learning tasks and protocols developed by the project staff and modeled during the Summer Institutes,” (p. 70) were traits of an implementation scale that were correlated to student achievement.

The professional development was also designed to focus on understanding the progression of the CCSSM standards and effective research-based instructional strategies including classroom discourse, hands-on instruction and engagement strategies that promote achievement in mathematics for elementary students. The project specifically addressed the following CCSSM standards: Grade 3 Measurement and Data Standards 1–2 and 5 – 8, Grade 4 Measurement and Data 1-3 and 5 – 7, Grade 5 Numbers and Operations – Fractions 3– 7 and Grade 5 Geometry 1– 4. These were chosen because of the district students' historically poor performance on Criterion Reference Tests in these domains.

### **Methods and Findings**

Sixty-nine elementary teachers participated in the professional development: 23 third-grade, 21 fourth-grade, and 25 fifth-grade. The selection of teachers was made through an application process that gathered input from building principals to ensure participants had the capacity to develop best practices to support the sustainable implementation of mathematics content including working with others outside the classroom. As such, after the professional development (PD) teachers were expected to share information at their respective schools concerning what they learned as a result of the professional development particularly with regard to learning progressions, Standards for

Mathematical Practice, and effective instructional practices for enhancing student achievement.

Participants engaged in a one-week PD to understand the content, depth, and rigor of CCSSM mathematics content and practices. Participants engaged in hands-on instruction that discussed various solution strategies, alternative student conceptions, effective questioning techniques, and justifying solutions by reasoning as they extended their own understanding of mathematical content knowledge appropriate to the grade levels in which they teach.

To assess content knowledge of teachers, an assessment was created for each of the grade levels. Of the items on each test, 14 were common to all grade levels 3-5 and oriented towards assessing teachers' pedagogical and mathematical knowledge for teaching. Because the remaining items per grade level were developed to address content specific to the particular grade level of the participants, only the results on the 14 common items are reported here. While the focus of the professional development was on specific measurement, data, fractions, and geometry CCSSM standards from Grades 3 – 5, the research reported here largely relates to geometry and measurement concepts in all grade levels. Specifically, the geometry and measurement items common to all grade levels in the assessment are related to topics such as classification of geometric figures, geometric properties, area and perimeter relationships and include items that look at structure, examine arguments, and look for patterns of regularity in reasoning. Table 1 presents descriptive statistics for both the pretest and posttest for each grade level.

The mean scores increased for the teachers at each grade level, with increases of 1.61, 2.28, and 2.24, for grades 3, 4, and 5, respectively. That there was not a larger gain is not surprising due to the limited time of the project as changes in conceptual knowledge take time to develop. The mean value of both the pretest and posttest were smallest for Grade 3 and largest for Grade 5. The results on the posttests ranged from less than 50% for Grade 3 to just over 57% for Grade 5, indicating there is room for more growth. Two-tailed paired t-tests were used to explore the differences on the pretests and posttests for each grade level. The values, 0.00059, 0.000062, and 0.000019, respectively for grades 3, 4, and 5, indicate significantly higher posttest scores for each grade level.

Table 1

*Descriptive statistics on correct responses on pretests and posttests per grade level*

	Pre			Post		
	Gr 3	Gr 4	Gr 5	Gr 3	Gr 4	Gr 5
N	23	21	25	23	21	25
Total	14	14	14	14	14	14
Mean	4.87	5.29	5.92	6.48	7.57	8.16
Min	1	2	2	3	4	2
Q1	3.5	3	4	5.5	7	7
Median	5	6	5	6	7	8
Q3	6	7	8	7.5	8	11
Max	9	9	11	11	11	13
SD	1.87	2.19	2.27	1.97	2.13	3.10

Pretest, posttest, and change between pretest and posttest on correct answers per questions are given in Tables 2, 3, 4, respectively. The data in Table 2 show that for only Questions 1 and 14, 65% or more of the teachers answered correctly at each grade level, although Grade 5 correctly answered 68% on Question 4. Less than 25% of the teachers answered Questions 3 and 12 correctly at each grade level.

Table 2

*Percent of correct answers per question per grade level on pretests*

Question	Grade 3 N = 23	Grade 4 N = 21	Grade 5 N = 24
1	0.74	0.67	0.92
2	0.35	0.29	0.36
3	0.17	0.24	0.12
4	0.26	0.62	0.68
5	0.22	0.38	0.20
6	0.26	0.10	0.20
7	0.26	0.48	0.56
8	0.26	0.14	0.20
9	0.30	0.14	0.16
10	0.22	0.24	0.36
11	0.52	0.48	0.52
12	0.09	0.14	0.20
13	0.52	0.52	0.76
14	0.70	0.86	0.68

Table 3

*Percent of correct answers per question per grade level on posttests*

Question	Grade 3 N = 23	Grade 4 N = 21	Grade 5 N = 25
1	0.57	0.62	0.76
2	0.48	0.48	0.76
3	0.65	0.81	0.64
4	0.70	0.71	0.76
5	0.30	0.43	0.44
6	0.26	0.24	0.28
7	0.61	0.62	0.56
8	0.22	0.33	0.28
9	0.17	0.19	0.52
10	0.13	0.29	0.32
11	0.43	0.67	0.60
12	0.52	0.48	0.52
13	0.78	0.86	0.84
14	0.65	0.86	0.88

Table 4

*Percent gain of correct answers per question per grade level from pretest to posttest*

Question	Grade 3 N = 23	Grade 4 N = 21	Grade 5 N = 25
1	-0.17	-0.05	-0.16
2	0.13	0.19	0.40
3	0.48	0.57	0.52
4	0.43	0.10	0.08
5	0.09	0.05	0.24
6	0.00	0.14	0.08
7	0.35	0.14	0.00
8	-0.04	0.19	0.08
9	-0.13	0.05	0.36
10	-0.09	0.05	-0.04
11	-0.09	0.19	0.08
12	0.43	0.33	0.32
13	0.26	0.33	0.08
14	-0.04	0.00	0.20

With regard to the posttest data in Table 3, more than 64% of the teachers at each grade level answered Questions 3, 4, 13, and 14 correctly. However, less than 45% of the teachers per grade level answered Questions 5, 6, 8, and 10 correctly. Additionally, only 17% of Grade 3 teachers, and 19% of Grade 4 teachers answered Question 9 correctly.

When examining the gains in Table 4, a drop is evident for Question 1 at all grades, even though it was a questions answered correctly at a fairly high level on the pretest. Question 3 had gains of 48% or more at each grade and Question 12 had gains of 32% or more at each grade. Grade 3 had 6 questions on which the percent correct on the posttest was less than the percent correct on the pretest. However, there was only one question for Grade 4 and two for Grade 5 where the posttest score was less than the pretest score.

In particular, the gains in Questions 3 and 12 potentially represent teachers' developing understandings of attributes of quadrilaterals. Specifically, Question 3 relates to identifying a square as a specific case of a rhombus; Question 12 relates to understanding constant ratios among the attributes of quadrilaterals, specifically with regard to squares and the distance "across" compared to the distance "around." In each case, specific attention was given to concepts that underlie these problems during the PD. In particular, in discussing in discussing the Grade 3 standards, concepts such as area (and the associated attributes of figures) were discussed that could have led to teachers gaining better understandings related to attributes of quadrilaterals. Furthermore, in Grade 4, discussions related to the measurement and data strand (specifically 4.MD.3) could have led to teachers being more sensitive to area and perimeter concepts related to attributes of quadrilaterals. Finally, teachers in Grade 5 were engaged in conversations around geometry standards, specifically 5.G.3, in which they discussed attributes specific to quadrilaterals (and even more specifically, rectangular shapes). Consequently, although there is no causal evidence, correlational curiosities abound related to the gains in correct answers for Questions 3 and 12.

Alternatively, the decrease in correct answers on other questions could be due to the fact that because these questions try to get to the heart of what teachers know and understand, teachers may have some confusion about what they know. That is, if teachers have fragile content knowledge they might waver in their responses to questions that are geared to assess their pedagogical content knowledge. To examine the changes in pre and posttest responses further, we examined two other pieces of data. In Table 5 these two pieces of data are presented, namely, the number of questions answered incorrectly on the pretest but answered correctly on the posttest (denoted W-->R); and those answered correctly on the pretest and incorrectly on the post-test (denoted R-->W). Examining

these gives not only a measure of how many more (or fewer) questions an individual answered correct on the posttest, but gives a partial measure of confidence in their correct pretest solutions. That is, ideally there should be no R-->W for a participant.

Table 5

*The number of answers changed: wrong to right (W-->R), and right to wrong (R-->W) per participant per grade level*

Grade 3 N = 23		Grade 4 N = 21		Grade 5 N = 25	
W-->R	R-->W	W-->R	R-->W	W-->R	R-->W
3	1	2	0	1	2
4	3	3	1	2	0
4	0	4	3	0	3
6	2	4	1	4	0
4	1	4	2	5	1
3	1	3	2	3	0
2	2	2	1	6	1
1	1	4	2	4	2
3	2	1	1	4	1
3	0	5	0	3	3
1	2	5	1	3	1
3	0	5	0	5	1
3	1	2	1	2	0
2	1	0	3	2	1
4	4	2	1	4	0
4	3	4	1	3	1
5	4	3	1	4	0
3	1	5	1	3	2
6	1	4	2	5	1
3	2	7	0	5	3
3	6	4	1	6	0
5	0			2	0
2	2			5	1
				1	1
				1	2

In Table 5, of the 69 participants, 16 (23%) did not change an answer from R-->W, 29 (42%) changed one answer from R-->W, and 24 (35%) changed two or more answers from R-->W. This is an indication of fragile knowledge for over a third of the

participants. Furthermore, in Table 6 data related to changing answers for each question per grade level is presented.

Table 6

*Number of answers changed: wrong to right (W-->R), and right to wrong (R-->W) per question per grade level*

Question	Grade 3 N=23		Grade 4 N=21		Grade 5 N=25		Totals N=69	
	W-->R	R-->W	W-->R	R-->W	W-->R	R-->W	W-->R	R-->W
1	2	6	3	4	0	4	5	14
2	6	3	6	2	11	1	23	6
3	11	0	13	1	14	1	38	2
4	11	1	3	1	4	2	18	4
5	4	2	5	4	7	1	16	7
6	3	3	4	1	6	4	13	8
7	10	2	5	2	5	5	20	9
8	5	6	6	2	4	2	15	10
9	2	5	4	3	9	0	15	8
10	1	3	2	1	3	4	6	8
11	2	4	6	2	3	1	11	7
12	11	1	8	1	8	0	27	2
13	6	0	7	0	3	1	16	1
14	3	4	1	1	6	1	10	6

We can see that Questions 1 and 10 had more R-->W changes than W-->R changes and that over 10% of the teachers changed Questions 5, 6, 7, 8, 9, 10, and 11 in a R-->W manner. On Question 3 almost half of the participants changed from W-->R, while only two changed from R-->W. The same was seen on Question 12, where 27 changed from W-->R and only 2 changed from R-->W; and Question 13 where only 1 changed from R-->W. Again, such changes are reflected by the coverage of the standards discussed earlier. In particular, Question 13, although not related specifically to perimeter, area, or quadrilaterals, is related to rigid motions of a plane and symmetries that was prevalent in discussions related to the inclusion of transformational geometry within the CCSSM (e.g., CCSSM, p. 74) throughout the week long PD.

### **Discussion**

This paper illustrates that a five-day professional development focused on CCSSM standards for mathematical content and standards resulted in teachers increasing their

content knowledge in general, and on several questions in particular. Specifically, content on the pre and posttests that were relatively aligned to the underlying concepts in specific CCSSM standards addressed by the PD saw gains in the number of teachers answering correctly. However, concerns still exist related to teachers' propensities to change their correct pretest answer to an incorrect posttest answer.

Specifically, we argue that such changes in answers from "right to wrong" speaks to an underlying fragility within teachers' confidence of their mathematical knowledge. Perhaps such changes were further affected by teachers' engagement in more robust problem situations that they had experienced prior to the PD. In other words, in presenting problems throughout the PD that were identified by the PD developers as potentially fostering conversations regarding the standards for mathematical practice, the participating teachers may have questioned their prior knowledge through an "incorrect versus correct" paradigm rather than a "how else can this mathematics be represented" paradigm. That is, engaging in PD with a mathematical lens of "incorrect versus correct" could have led the teachers to believe their original mathematical thinking was "not correct" rather than "correct, but could be better informed conceptually." As such, a potential area of future study could well focus on the epistemological views of teachers regarding what it means to "know" mathematics as they engage in PD, along with the way in which they respond to pre and post pedagogical and mathematical content knowledge assessments for the PD.

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# **A review of the validity and the reliability of ego-resiliency scales for school-aged children in South Korea**

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## **Abstract**

Research on ego-resiliency has reported substantially over the past decade in South Korea. Some of the studies revealed inconsistent results regarding ego-resiliency. The evaluation of research on ego-resiliency requires reliable and valid measures to illustrate more clearly. The purpose of this study is to review scales of ego-resiliency of school-aged children in South Korea through literature. To achieve the aims, we reviewed articles published recently focusing on three research questions as follows: 1. What is the most used scale? 2. How is the reliability of scales? 3. What types of validity is conducted?

For analyzing the scales, fifty three articles, (which were published between 2002 and 2012), were selected from four academic library databases including RISS, KISS, NDSL, & DBpia, focusing on indexed in the KCI(Korea Citation Index). The KCI is the most influential and useful resource in Korea. The subject in this review was limited to elementary school students. The scales were divided into self-reported and parent-reported form. Two of the scales were developed by Korean authors, the rest of the scales were used as translated version. Frequency and content analysis were used.

Total of eleven scales on ego-resiliency were used. All of the articles presented an

internal consistency on their scales. The most used scale was Ego Resiliency scale used in Park(1996)'s study, which was a modified scale from the scales of O'Connell-Higgins(1983) and Block & Kremen(1996). This scale used in Park's study had a range of Cronbach's alpha from .77 to .90. The next most used scale was Block and Kremen(1996)'s Ego Resilience Scale(ER89) translated into Korean with Cronbach's alpha from .69 to .94. Except for two scales presented above, the rest of the scales were used for under three times. Ju and Lee(2007)'s Resilience Scale for Children(RSC) had relatively low application frequency(used in only three studies) but had the highest average Cronbach's alpha .94. All of the analyzed scales, the lowest average Cronbach's alpha was .76 with scale extracted from the ego-resiliency related items from Block & Block(1980)'s California Child Q-Set(CCQ).

Two of fifty three articles presented both a construct validity by factor analysis with Principal Component Analysis(PCA). One was a article utilized Ego Resiliency scale used in Park(1996)'s study, the other was a articles used Block and Kremen(1996)'s Ego Resilience Scale(ER89) translated into Korean. Particularly, Block and Kremen(1996)'s Ego Resilience Scale(ER89) was developed for young adults(18 and 23) so the scale was revised for school-aged children. After the factor analysis, this scale was reported as three factors unlike four factors in original scale.

In Korea, there seem to have mainly two preferable scales for measuring ego-resiliency in school-aged children. One of the scales was developed for children, but the other one was developed for young adults. The reliabilities for the scales could be evaluated acceptable; however, the validity regarding application of ego-resiliency for young adults need to replicate more. With regard to these findings, further studies on the validity and reliability and differentiation between clinical and non clinical subjects on the study of ego-resiliency are need to applying the appropriate scale according subjects.

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## **Hawaii International Conference on Education 2014**

### The Wheel of Learning in Higher Education

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This paper examines retention and degree completion of students registered in a first year course entitled EDUC 104 Introduction to Academic Pedagogy: An Aboriginal Approach. The proposed course, conceptualized by a Faculty of Education in conjunction with the Aboriginal Programs and Services is based on the nationally recognized University 101 program developed by the University of Southern Carolina (Barefoot, 1993; Gardner, 1980; 1981). However, in keeping with culturally relevant pedagogy, the authors explore the pedagogical impact of using the Wheel of Medicine in an introduction to university course. Imbedded in this approach is a self study of teacher education practices (S-STEP) which aim to create and foster positive learning environments by harmonizing the intellectual, emotional, physical and spiritual self according to community and context. Participants will be invited to discuss issues, strategies and challenges faced when using alternate approaches teaching underrepresented and marginalized youth.

## **Introduction**

The intent of this paper is to explore how the Medicine Wheel can be used as a conceptual framework in higher education. This paper will focus on understanding and acknowledging one of many First Nations' philosophical approaches to teaching and learning. By focusing on the Medicine Wheel, an examination of basic principles that support successful transition to academic programs can be identified. In particular, the newly created course for Access students, *Introduction to Academic Pedagogy* at a Western Canadian university campus will serve as an important example of how higher education can embrace non-traditional pedagogies.

### **A First Nations World View of Education**

*“Indigenous knowledge is an adaptable, dynamic system based on skills, abilities, and problem-solving techniques that change over time depending on environmental conditions”* (Battiste, 2002, p.11).

It is to be noted that the University of British Columbia's Okanagan campus sits on unceded Okanagan territory. While respecting the diversity of First Nations approaches to teaching and learning, the focus of the instructional design resides in Okanagan epistemology. In the preface to Armstrong's (2005) essay on Okanagan education, the Aboriginal principle of “nested systems” (p. 80), where “each living system forms a whole itself, while at the same time... is part of a series of larger systems” (p.80) describes a comprehensive perspective of education that is very different from the typical Eurocentric worldview. As First Nations scholar, Marie Battiste (2002) writes, the “holistic nature of Indigenous knowledge” (p.10), is “fundamental” (p.10) to Aboriginal worldviews and must always be taken into account when considering Indigenous education. This viewpoint is also highlighted within the First Nations Education Steering Committee's *First Peoples' Principles of Learning* (FNESC, 2013) which states that: “Learning is holistic, reflexive, reflective, experiential, and relational (focused on connectedness, on reciprocal relationships, and a sense of place)” (see Addendum A). This idea of interconnectivity reflects the nature of the nested system, where all facets of learning link with many other systems on emotional, spiritual, mental, and physical levels.

Battiste (2002) also writes that from an Indigenous perspective: “Knowledge is ... inherent in and connected to all of nature, to its creatures, and to human existence” (p.14), where no one part is perceived as more important or separate unto itself. In the Aboriginal worldview, we are all seen as interconnected with the natural systems surrounding us, rather than separate, as is often found in Western conceptions and understandings. Also, changes to any one aspect of life are recognized as affecting everything else. Battiste’s (2002) statement that: “Indigenous knowledge thus embodies a web of relationships within a specific ecological context” (p.14) describes the strong connections to the natural world surrounding each of us that is inherent in this worldview. The term “ecoliteracy” used by Armstrong (2005, p.83) and others to summarize First Nations’ thinking about education, affirms this idea. When discussing Aboriginal epistemology, Anuik and Gillies (2012) also recognize this philosophical outlook. They write: “Everything is/has Spirit/Energy. We need to be mindful of our feelings, thoughts, words, and actions. What we put out there affects everybody and everything else” (p.68).

In relationship to education, teaching from this holistic perspective offers a very different outlook from conventional Western school structure, where school subjects are divided into individual disciplines and students are required to learn in a more linear fashion (Armstrong, 2005, p.81; Claypool & Preston, 2011, p.2). This way of thinking tends to clash with Aboriginal worldviews and have a negative impact on Aboriginal students because it lacks the holistic perspective of Indigenous epistemology (Claypool & Preston, 2011, p.3). In order to rebalance this issue, Battiste (2002) writes of the need to “end the fragmentation Eurocentric educational systems imposed on First Nations students and facilitate the goal of wholeness to which Indigenous knowledge aspires” (p.30).

### **The Importance of Bridging Programs for Aboriginal Students**

*“healing involves honouring and practising Indigenous teachings that stimulate the heart as well as the brain to collaborate in post-secondary education. However the challenges are formidable, especially because the objectives set for learners and teachers were established long before either party entered post-secondary institutions” (Anuik & Gillies, 2012, p.66)*

This disconnect between Indigenous worldviews and the traditional Canadian school model is beginning to gain much more notice within the academic community due to low graduation rates for Aboriginal students in both secondary and post-secondary institutions. According to a *Canadian Policy Research Networks Report* (Sharpe and Arsenault, 2009), Aboriginal students have significantly lower than average graduation rates from high schools and are not entering universities or other higher level education institutions at anywhere near the rates of their other Canadian counterparts. The report states that: “Aboriginal Canadians aged 15 and over have a much lower educational attainment than their non-Aboriginal counterparts, with 43.7 percent not holding any certificate, diploma or degree in 2006, compared to 23.1 percent for other Canadians” (p.8).

Having a better understanding of why this is and how we, as educators, may be able to help Aboriginal students have more success within the educational system is becoming a growing concern, particularly given the fact that the Aboriginal population is currently one of the fastest rising populations in Canada (Canadian Council on Social Development, 2012). Over the next few years, First Nations, Métis, and Inuit (FNMI) students will become key players within the Canadian educational and economic system (Sharpe & Arsenault, 2009), so consideration of Aboriginal worldviews is going to become an imperative part of maintaining strong discourse and fostering academic success for this important community of learners (Claypool & Preston, 2011, p.1).

Many scholars have identified the fact that the sole use of Eurocentric pedagogy has not worked for First Nations students and recommend that traditional Aboriginal philosophies of education be incorporated into institutional programming (Battiste, 2002; Anuik & Gillies, 2012; Stang & Vedan, 2012; Claypool & Preston, 2011). Battiste (2002) writes that “Indigenous knowledge is now seen as an educational remedy that will empower Aboriginal students if applications of their Indigenous knowledge, heritage, and language are integrated into the Canadian educational system” (p.9). However, she also points out that “Despite this realization, few universities across Canada have made Aboriginal education a mission or priority” (p.9; Battiste & Henderson, 2009, p.16). This problem is confirmed by Stang and Vedan (2012) who write that though there is assistance in place to support Aboriginal admissions into most universities, many do not provide

the necessary access or bridging programs to foster First Nations student success once they have entered an institution (p.7).

As Stuhldreier and Ford (2009) write, upon entering the university environment, these students may face considerable challenges because of vast differences between Indigenous worldviews and Eurocentric schooling. They state that “post-secondary education culture does not reflect Aboriginal perspectives, traditions, values, nor the diversity of Aboriginal communities” (slide 2). They, like Battiste (2002) and others, assert that “Aboriginal traditions and culture need to be incorporated into curriculum” (slide 3) and that “culturally suitable curriculum must incorporate Aboriginal perspectives and world views into the planning, design and delivery of instruction” (slide 3).

As far as post-secondary education is concerned, incorporating Indigenous knowledge (IK) into the curriculum offers a means to address some of the discrepancies found missing between Western and Aboriginal pedagogy. As Battiste and Henderson (2009) write: “In a quest to heal their nations and communities, Indigenous scholars and professionals have turned to IK [Indigenous knowledge] and Elders to restore control over Indigenous development and capacity enhancement” (p.6). The University of British Columbia, Okanagan Campus, has recognized the need to better support the transition of students into academic life, and thus have created a bridging course for Aboriginal and non-Aboriginal students called *Introduction to Academic Pedagogy* (Ragoonaden, 2013). This course will use elements of Indigenous pedagogy, in particular the Medicine Wheel, as its foundation in order to teach students how to gain “the essential skills needed for academic success” (Ragoonaden, 2013, p.3) in a university setting.

### **The Medicine Wheel**

*“Holistic teaching from the Medicine Wheel begins with the individual and expands therefrom to include an Aboriginal view of human development: mental, spiritual, emotional, and physical”*  
(Saskatchewan Education, 2002)

The Medicine Wheel, a holistic teaching instrument used by almost all First Nations communities in both North and South America for millennia (Bopp, Bopp, Brown, & Lane, 2004, p.9), is a profound example of Indigenous knowledge that has proven to be very useful for incorporating Aboriginal principles directly into educational curriculum. The Aboriginal Wheel of Medicine or “sacred hoop” (Neihardt, 1979, p.155), which is read as both a circle and a spiral, is used to symbolize the interconnectivity of the Aboriginal world view, and offers a very practical way to instruct from this perspective. In its simplest form, it is represented by a circle divided into four parts, with each part representing one aspect of human nature: physical, mental, spiritual, and emotional, with volition or self determination at the point of convergence in the centre (Bopp, et al., 2004, p.36).

The Medicine Wheel is described by Loiselle and McKenzie (2006) as providing a “framework that presents a complete picture of a ‘person-in-environment’ and provides a map or plan for problem solving, for enhancing one’s awareness and understanding of self and for restoring healthy relationships and general well-being” (p.11). The framework of the Medicine Wheel, which on the surface appears very simple, is actually capable of portraying many complex layers intrinsic to the ever-changing and dynamic epistemology it represents. This powerful tool is used in Aboriginal settings as a guide to teach individuals or groups about self understanding (Claypool & Preston, 2011, p.3) as well as how to navigate the ever-changing conditions of their lives. It can also help people make decisions that reflect the integrative and holistic principles inherent in this worldview.

The philosophical outlook behind the Medicine Wheel suggests that each of its four aspects must be in equilibrium or equally developed in order for an individual, decision, or action to be healthy and well-balanced (Bopp, et al., 2004, p. 38). As Loiselle & McKenzie (2006) write,

“the world in which we live is composed of four cardinal directions existing in harmony, balance, complementarity and unity: east, south, west, and north. Each of these directions corresponds to one component of a person’s being as identified in the Medicine Wheel: the

physical/material, the emotional/relational, the mental/intellectual and the spiritual/cultural” (p.9).

The Medicine Wheel, then, acts as a holistic representation of both the interconnectivity of the self and the connection of the self with the rest of the world. One can think of it as a metaphorical compass that can lead individuals in a positive direction towards self-knowledge and understanding of their place in the world. Because the Medicine Wheel is in the form of a circle or spiral, the relationships between these systems, an integral aspect of examining the world through Aboriginal perspectives (Battiste, 2002, p.10), are inherently taken into consideration. Loiselle and McKenzie (2006) write that by viewing whole systems as interconnected circles or spirals, “No single element at any level or of any kind can thus be treated in isolation” (p.8). Finally, as Cargo, Peterson, Levesque, and Macaulay (2007) write, within this simple design, “balance, interdependence, and wholistic health are captured in the symbolism of the Medicine Wheel” (p. 88).

### **Variations in the Medicine Wheel**

There are many different variations on the theme of the Medicine Wheel. As Bopp, et al. (2004) write, “Because many tribes and peoples have used the Medicine Wheel to look at themselves, there are many different ways of explaining those universal truths that human beings share in common” (p.35). However, though the Medicine Wheel may look slightly different from one community to another, for example which colours represent which elements or directions, the same universal principles can be applied with each version of it. As Bopp, et al. (2004) write: “Even though some tribes will assign different qualities to each of the points on the circle, ...the teachings telling which qualities make up the total picture of a complete human being are nevertheless universal” (p.36). In this paper, for ease of communication, I will use Bopp, et al.’s rendering, bearing in mind that many other, equally valid, manifestations of this teaching tool exist and are used by different Aboriginal groups.

### **Parts of the Medicine Wheel**

Each quadrant of the Medicine Wheel represents one aspect of the human disposition and in most Aboriginal belief systems, only when all of these aspects are equally present can a person

or an action, be deemed as whole. “To be a whole person is to be alive in a physical, emotional, mental, and spiritual way” (Bopp, et al., 2004, p.56), therefore, each aspect of the Medicine Wheel must be taken into consideration when learning new ideas or working towards goals. The holistic, circular, and spiralling nature of the Medicine Wheel, similarly reflected in the circular nature of the seasons and other patterns, teaches us that each of the quadrants must be revisited over and over again throughout one’s life (p.43), a fact that can easily be seen when one begins to apply its teachings to decision-making and goal setting.

According to Bopp, et al. (2004), the Eastern quadrant represents the spiritual component, “illumination” (p.43) or ideas, and is coloured red. It symbolizes new beginnings and the season, spring. The East represents the gaining of new insights and is thought to be a good place for starting new projects and to begin learning about the power of one’s own determination or resolve (pp.42-47). The Eastern quadrant speaks of the interconnectivity of all things and marks the beginning of the journey, but not the end. As Bopp, et.al. write: “The East is the place of all beginnings. The human being must return many times to the East ... [where] each time there will be new things to learn on a new level of understanding” (p.42).

The Southern quadrant represents the emotional part of one’s life, innocence and “the place of the heart” (p.43). In Bopp, et al.’s rendition, it is coloured yellow. It is symbolized by summer and teaches about using discipline and “determination (an aspect of volition, i.e. the will) to fulfill our purposes and achieve our goals” (p.49). Part of the teachings of the South relate to the act of training oneself on emotional levels in order to be able to meet one’s future aspirations (pp.48-52). According to Bopp, et al., when working with the Southern quadrant, one can learn about controlling the emotions and developing the senses to best serve your own and others’ interests.

The Western quadrant is generally coloured black and is representative of the physical component of the self. It is symbolized by autumn or fall and speaks of introspection. The West “is the place of testing, where the will is stretched to its outer limits so that the gift of perseverance may be won” (p.53). The West therefore, represents the physical determination needed to complete our goals, as well as the vision required to “see clearly with our inner eye

what we could become, or what the people could become together, if we should undertake the necessary journey” (p.61). The journey to the West then, helps one see what *could be* and to “develop...[oneself] to the fullest possible extent” (p.60).

The Northern quadrant represents the mental component and represents wisdom and “detachment” (p.66). It is generally coloured white and is symbolized by winter. In the North, the task is to find the “certitude (sure knowledge) that the goal is near and can indeed be won” (p.65) and it teaches about “completion and fulfillment” (p.65) of projects started. The journey to the North, then, is about training the mind how to intellectually detach, and to be able to see objectively “all things as they really are” (p.71) in connection to everything else around us. As Bopp, et al. put it: “Here the powers of volition reach their zenith as we learn to complete what began as a far away vision” (p.65).

The very centre of the Medicine Wheel can represent the self or the self-determination of an individual or a group. As summarized from *The Sacred Tree*, Cargo, et al. (2007) write: “The centre of the Medicine Wheel, the point of convergence of the four aspects of self, is referred to as the point of self-determination. This point is said to reflect the will of a person or group to influence the course of their lives” (p.90). Looking at one’s life through this centre point teaches us how we “fit together with everything else” (p.67) and also helps us to direct our lives in alignment with each of the four elements of the Medicine Wheel. Finally, as Bopp, et al. write: “Since volition is a primary force in developing all of our human potentialities, it is placed at the centre of the Medicine Wheel” (p.14) in order to lead us toward the vision of what our potential could be.

### **Using the Medicine Wheel in Education**

*“Education for First Nations students can and should help them get more in touch with their Indigenous consciousness and the traditions that inform and animate their intimate and spiritual selves”* (Battiste, 2002, p.29).

The way to read the Medicine Wheel is as a mirror through which to examine one’s life or intended goals from each element: the physical, mental, spiritual, and emotional. If a person is in

balance, then the elements from each of these perspectives will be in balance. Bopp, et al. (2004) state that: “Our journey around the wheel is a symbolic one. What we are really doing is using the patterns found in nature... to understand our own selves” (p.41). Loisel and McKenzie (2006) see the first layer of the Medicine Wheel as a tool for self-assessment. They write: “By looking into the mirror, which is the first wheel, the person can see that his construct of the reality of his current life may not be complete or accurate. He will then be able to identify his strengths and weaknesses and plan adjustments accordingly” (p.13). As Mazzola (2004) writes, the original goal of the Medicine Wheel was to help one in:

developing a balanced personality that included the highest possible combination of Wisdom, Innocence, Introspection, and Illumination. Education consisted of the progressive development of each individual’s potentials, until the powers of the North, South, East, and West were integrated in an authentic manner, appropriate to the calling, sex, and station of the individual (p.66).

In examining the teachings of the Medicine Wheel, one can thus see that they offer a very comprehensive way of understanding the self and the world around us. Loisel and McKenzie (2006) write that examining one’s life in this way can be “an eye-opener as to what attitudes and behaviours one may need to develop in order to live a balanced, harmonious, responsible, and accountable life” (p.15) and as Bopp, et al. (2004) write: “Just like a mirror can be used to see things not normally visible, ... the Medicine Wheel can be used to help us see or understand things we can’t quite see or understand because they are ideas and not physical objects” (p.9).

The holistic perspective of Medicine Wheel describes a very different perspective from Western pedagogy in that it allows students to focus on areas of life not normally addressed in standard education. As Battiste (2002) writes: “Much Indigenous education can be called *endogenous* as it revolves around a transformational process of learning that animates students’ inherent talents and capacities” (p.30). Unlike in conventional Western pedagogy, where the focus is mainly on the mental and occasionally physical aspects of education (Anuik & Gillies, 2012, p.74), Indigenous teachings seek to incorporate the spiritual and the emotional elements as well, in the belief that all elements are essential to the whole picture of a human being as well as their learning processes. As Bopp, et al. (2004) write: “It cannot be said that a person has totally

learned in a whole and balanced manner unless all four dimensions ...have been involved in the process” (p.29).

### **Indigenous Knowledge and Student Engagement**

In the desire to understand how Aboriginal students can be more effectively supported, Indigenous educational philosophy and epistemology are lately becoming much better understood and researched in contemporary educational discourse. For example, Claypool and Preston (2011) have identified the need for changes to support Aboriginal students in the educational system by suggesting that “student learning and assessment techniques need to parallel Aboriginal worldviews and ways of knowing” (p.85). This movement towards “naturalizing” Indigenous knowledge such as the Medicine Wheel into mainstream instruction (Battiste and Henderson, 2009, p.6) is one that is rapidly gaining ground within academic circles (Battiste, 2002; Claypool & Preston, 2011; Battiste & Henderson, 2009; Saskatchewan Education, 2002) and offers the justification for incorporating the teachings of the Medicine Wheel in bridging programs such as *Introduction to Academic Pedagogy* (Ragoonaden, 2013) at the University of British Columbia’s Okanagan Campus.

Battiste and Henderson (2009) state that, “naturalizing IK creates potential for Aboriginal and non-Aboriginal learners in trans-systemic ways that EK alone cannot do” (p.13), highlighting both the fact that Indigenous knowledge not only has the potential to assist Aboriginal students, but also those of non-Aboriginal backgrounds as well, and also indicating that IK can help students because it is “trans-systemic” meaning that it lies beyond conventional educational structures. In their article, Anuik and Gillies (2012) discuss the success they have had in incorporating IK into their teaching practices in post-secondary settings, concluding: “It is clear that IK can strengthen teachers’ pedagogies regardless of the cultural or racial identities of the teachers or students” (p.75). The Saskatchewan Education’s (2002) guide to Indigenous pedagogy makes a similar assertion, stating: “The teachings of the Medicine Wheel offer a model of inclusion for all students” (p.1).

Unlike conventional Western education, where only the mental, and occasionally physical processes are highly cultivated (Anuik & Gillies, 2012; Saskatchewan Education, 2002),

Indigenous pedagogy, the Medicine Wheel in particular, seeks to engage the emotional, and spiritual as well, thereby creating highly engaging learning environments for students. Anuik and Gillies state: “As teachers and lifelong learners, we believe emotional and spiritual growth is a requisite for learning. However, that point is often not recognized in the educational system” (p.65). As Battiste (2002) writes: “the learner’s affective state is often not considered in the domain of educational philosophy” (p.16). Rather, she states, “Western or modern education focuses on a cultural construction of knowledge built on Eurocentric origins and concrete science” (p.16). However, as Battiste and Henderson (2009) write: “when IK is naturalized in educational programs, the learning spirit is nurtured and animated” (p.13).

Though the tradition of solely focusing on the mind in Western education has much value, it can also result in alienation that creates disengagement and disconnection from the learning process for many students, particularly for those whose cultural worldview integrates the whole self: physical, mental, spiritual, and emotional,. Anuik and Gillies (2012) suggest that incorporating all four elements of the Medicine Wheel in education is such an important part of supporting students because it offers a more holistic approach to learning that permits for the “collaboration of the heart and the mind” (p.64), a point they say is essential to engaging and nourishing the learning process. They write that incorporating the teachings of the Medicine Wheel and other Indigenous knowledge into educational practices allows educators to link the passions of the heart with the intellect of the brain to better engage and connect students to their own understandings of knowledge, not only on a personal, but on a community level as well.

For example, these educators discovered that, when working with controversial topics such as those found in anti-racism education, Western style pedagogy on its own created limitations to understanding by generating “learning blocks” (Anuik and Gillies, 2012, p.72) that disengaged students from the processes needed to address controversial or emotion-laden issues. They write, “most contemporary teachers and teacher candidates have been trained in western education and, therefore, want to practise anti-racism education through mental capacities only. ... In anti-racism education, however, learning cannot happen if emotions are left out of the process” (p.74). Each of these educators found success however, by exploring, rather than avoiding, emotions in their teaching practices, and found that it was a means of better engaging the learning process for their

students. Battiste and Henderson (2009) summarize this success stating that: “by communicating the emotional journey that such explorations will generate, teachers and learners can create positive spaces where they can both learn and grow” (p.14).

### **The Medicine Wheel and Teacher Education**

*“educators need to make a conscious decision to nurture Indigenous knowledge, dignity, identity, and integrity by making a direct change in school philosophy, pedagogy, and practice”* (Battiste, 2002, p.30).

Despite much research suggesting that the inclusion of Indigenous knowledge and philosophy fosters success for both Aboriginal and non-Aboriginal students, there are still many factors blocking Indigenous educational reform. A large problem is that it is simply not being taught. In their findings, Higgins, Madden, and Korteweg (2013) state that even when adequate Indigenous curriculum is available, many teachers are highly resistant to teaching using Indigenous knowledge (p.10), which suggests that simply adding Indigenous teachings to an otherwise Western educational structure is not enough.

Battiste (2002) also alludes to this issue when she states: “Much literature in the last decade has focused on the importance of diverse cultural or multicultural methodologies to...address the needs of Aboriginal students. The studies however, do not examine the culture of the schools themselves” (p.16). This insight suggests that issues surrounding institutional Eurocentrism in schools are also an important factor to consider when examining student success. As Anuik and Gillies write: “Too often, the focus of Aboriginal education is on integration of Aboriginal content rather than decolonizing pedagogy and practice” (p.74). This issue reveals the importance of bridging programs, but also calls into question why Eurocentrism continues to persist within school culture.

In their study, Higgins, et al. (2013) found that many teachers were reluctant or even resistant to teaching from other cultural perspectives. These researchers identified the fact that “white teacher participants saw themselves as ‘cultureless’ and, as a result, did not have a clear understanding of culture” (p.10), thereby limiting their ability or perceived ability to teach from

another worldview. It was also identified that this perspective allowed teachers to avoid addressing questions of “white privilege” (p.4), permitting them to continue teaching from what Battiste (2002) describes as “the silent curriculum of Eurocentrism” (p.30).

Many of the teachers interviewed in this study felt they needed a better understanding of their own cultures before they could teach about other cultures. As an example, Higgins, et al. (2013) found that one teacher had “minimal knowledge of her personal ethnicity and ancestry... [but felt that] if she did possess such ‘cultural’ knowledge she would be better positioned to engage with and teach about cultures that differed from her own” (p.8). This lack of cultural understanding was found by the researchers to be a rather large one, stating that it “acts as a significant barrier to white teacher’s engagement in Indigenous education reform” (Higgins, et al., 2013, p.2). In regards to incorporating Indigenous knowledge into classrooms, for example through bridging courses, Battiste and Henderson (2009) write: “The heart and soul of these programs is a healing process of genuine caring about and sensitivity to the students, their heritage, and the knowledge that they come with and that they need to continue to learn” (p.16). However, without the needed cultural understanding of teachers towards Indigenous knowledge and worldviews, Higgins, et al. (2013) see their strength and empowering features as being easily lost (p.5).

According to these researchers this calls for the need to address not only the structure of the curriculum, but also teacher education (19-20). Just as written in the *First Peoples Principles of Learning* that “Learning requires exploration of one’s identity” (FNESC, 2013), Higgins, et al. see the need for teacher education programs that can “sustain white teachers’ processes of coming-to-know themselves as cultural beings...so that they are better positioned to attend to the relationship building and honouring of Indigenous knowledges and peoples” (p.20-21).

Interestingly enough, the teachings of the Medicine Wheel have the potential to also help with this process. Because they are largely about self-knowledge and self understanding (Claypool & Preston, 2011, p.3), incorporating the teachings of the Medicine Wheel directly into teacher education would not only support students by allowing for much-needed alternative perspectives that have the potential to create “positive empowerment” (Battiste & Henderson, 2009, p.14), but

would also help teachers come to a better understanding of themselves and their own cultures in order to potentially disrupt the problems and issues surrounding Eurocentrism in classrooms.

As Battiste (2002) writes: “By animating the voices and experiences of the cognitive ‘other’ and integrating them into the educational process, it creates a new, balanced centre and a fresh vantage point from which to analyze Eurocentric education and its pedagogies” (p.5). As educators gain a more thorough understanding and awareness of their own culture, they would thereby have more insight and understanding of other cultures, and thus be better equipped to support their diverse students.

## **Conclusion**

Rapidly changing demographics of Canadian society call for new approaches to education that are more inclusive and more holistic in nature. Despite the fact that Aboriginal youth are one of the fastest-growing populations in Canada, graduation rates from secondary and post-secondary institutions continue to be consistently lower than the national average. Incorporating Indigenous knowledge into standard curriculum in order to rebalance this discrepancy is one way that policy-makers, Elders, scholars, and educators have identified to address this pressing issue.

Unfortunately, despite the known effectiveness of Aboriginal pedagogy for students, Indigenous educational reform has been slow to occur. Researchers have identified Eurocentric school culture, as well as resistance and lack of understanding of white educators towards Indigenous knowledge, as key areas of concern. Changes in teacher education and standard curriculum that incorporate a process of learning about the self and one’s own culture in order to help shift the Eurocentric attitudes and practices that exist in conventional institutions have also been recommended by scholars.

The Medicine Wheel, an ancient Indigenous teaching tool that integrates not only the mental and physical elements into educational practice, but also the emotional and spiritual, provides an important means of addressing these issues. This holistic way of approaching education has been found to combat the chronic lack of engagement with conventional academic instruction that many Aboriginal students face, while also nurturing the learning spirits and self-

understanding of students from many diverse backgrounds. The teachings of the Medicine Wheel also have the potential to benefit not only students, but teachers as well, by offering a means for educators to better understand themselves through a holistic pedagogy that integrates the heart, body, mind, and spirit into educational practice.

## **Addendum A**

### *First Peoples' Principles of Learning:*

- Learning ultimately supports the well-being of the self, the family, the community, the land, the spirits, and the ancestors.
- Learning is holistic, reflexive, reflective, experiential, and relational (focused on connectedness, on reciprocal relationships, and a sense of place).
- Learning involves recognizing the consequences of one's actions.
- Learning involves generational roles and responsibilities.
- Learning recognizes the role of indigenous knowledge.
- Learning is embedded in memory, history, and story.
- Learning involves patience and time.
- Learning requires exploration of one's identity.
- Learning involves recognizing that some knowledge is sacred and only shared with permission and/or in certain situations.

**First Nations Education Steering Committee (FNESC, 2013)**

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# **Event-structure metaphor in American English and Saudi Arabic--- -Implications for translation**

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## **Keywords:**

**Metaphor, Event, Translation, Universal, Cognitive**

## **Abstract**

States, changes, actions, causes, difficulties, and purposes are events common among all human beings. Since these events are abstract, it has been argued (Lakoff and Johnson, 1980, 1999; Aldokhayel, 2009) that they are conceptualized metaphorically. They show little variations as to the conceptual domains used to conceptualize them. Such events can be mapped into physical domains of space, motion, and force (Lakoff, 1993). Against this background of universalism, this paper adduces evidences from the “Cognitive Translation Hypothesis” (Mandelblit, 1995) and "Cultural Variation" (Hiraga, 1991; Kövecses, 2005) to prove that in spite of the similarity in conceptualizing events in terms of space, motion, and force space, there is still a room for differences between languages and cultures exemplified in this paper through examples from English and Saudi Arabic. This research particularly addresses differences at the level of focus of languages and cultures on a particular member of a “duality of patterning.” For instance, English conceptualizes states as containers (I am in trouble) and/or possessions (I have a lot of trouble understanding something). Differences are also detected at the “Cognitive Translation Hypothesis” level (Mandelblit, 1995), which offers two scenarios: (i) a “similar mapping condition” (SMC) and (ii) a “different mapping condition” (DMC). The SMC is displayed if no conceptual shift occurs between the metaphors from English and Saudi Arabic; the DMC, however, is detected when a conceptual shift replaces the metaphors of the two languages. Both scenarios serve as a measure of similarity or difference in conceptualizing events in English and Saudi Arabic. However, Hiraga’s (1991) more explicit scenarios for “comparative cultures” isolates real differences between languages and cultures in terms of (i) similar metaphorical concepts and similar metaphorical expressions, (ii) similar metaphorical concepts but different metaphorical expressions, (iii) different metaphorical concepts but similar metaphorical expressions, and (iv) different metaphorical concepts and different metaphorical expressions. This paper concludes by showing the implications of the findings to translation from English into Arabic and vice versa.

## **Introduction**

Cognitive semantics, as represented by the cognitive theory of metaphor (CTM), deals with events through studying the cross-domain mappings that they create and the inferential systems that are created by these mappings. The study of the event-structure system has focused, therefore, on the event-structure metaphor (ESM), based on which “states, changes, processes, actions, causes, purposes, and means, are characterized cognitively via metaphor in terms of space, motion, and force” (Lakoff, 1993: 220). The event-structure concepts are abstract events that are “understood metaphorically in terms of space, motion, and force” (Lakoff, 1990: 57). The experiential motivation for this event-structure system comes from our familiarity with motion in space, motion, and force, whereby these metaphors “emerge from everyday bodily experience” (Lakoff and Johnson, 1999: 171).

In western tradition, pronouncements about cross-cultural phenomena originate in the writings of the E. Sapir and B. Whorf, who championed the Sapir-Whorf Hypothesis (Whorf, 1956). The essence of their hypothesis, in its strong version, claims that the language we speak shapes the way we think (known as linguistic determinism). The hypothesis went through some ups and downs but with the advent of cognitive science in the 1970s, comparing cultures has assumed an inter-cultural interest rather than a cross-cultural perspective owing to cognitive science's interest in the workings of the human mind. Basic to this approach, cultures are not anymore seen in conflict with each other but seen as offering different views of the world to be investigated, documented, and understood in order to gain insight into the human mind at both universal and non-universal dimensions (i.e., cultural).

This paper investigates the event structure metaphor in Saudi Arabic (SA) in contrast to American English (AE). The core point here is that although they belong to two different families of languages and cultures, SA and AE show striking similarities at the conceptual level and vary at the linguistic level and at the level of duality of patterning of events. This paper is structured with two sections: a section that offers an overview of the Saudi culture; and a section that represents the bulk of the article and addresses events in SA, and focusing on conceptual and linguistic levels of these events. The last section focuses on some implications of the cognitive view of events on translating.

## 1. Overview of the Saudi culture<sup>1</sup>

The Saudi society is a curious blend of two extreme worlds: the Saudi individual who is a rudimentary humble bedouin and a modern and flamboyant city person. This dual identity is, in effect, the outcome of a sudden social transformation brought about by the advent of wealth in Saudi Arabia.

### 1.1. Bigness as a cultural value

In Saudi Arabia, the idea of *large-size* family has its roots in the religious teachings of Islam as well as in the nature of the Saudi social structure itself. Both religion and the tribal system encourage and support this idea. From both perspectives, a *large family* means a reserve of fighting power to intimidate the potential enemy of Islam or the rival tribe. In the *Holy Quran*, for instance, the notion of fighting power is phrased as: “and make ready against them all you

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<sup>1</sup> The ideas in this overview of the Saudi culture are drawn from Hassan Souissi's Ph.D. dissertation (2007), *Visual metaphor as indirect claim: An interactive approach to persuasion, imagination and culture in contemporary TV advertising*, pp. 31-34.

can of power to threaten the enemy of Allah and your enemy” (Surah Al Anfal, Verse 60). Encouragement to have children is clearly expressed in this Quran quotation: “Wealth and children are the adornment of the life of this world” (Surah Al Kahf, Verse 46). Basic to this perspective, the notion *big* is generally an operative criterion in the lives of Saudis. This is obvious from the big-size automobiles they drive, the spacious villas/apartments they dwell in ,and from many other numerous facilities. Undoubtedly, the favorable Saudi economic situation enhances the notion *big*, but it should not be considered a necessary condition for its sustainability for the simple reason that large Arabian mud houses had existed long before the discovery of oil and the advent of wealth in general (Abdallah, Al Shakkar & Mortel, 1979).

In an exceptionally wealthy society (as is the case in Saudi Arabia), the criteria for judgment may vary widely and certain concepts such as *comfort* and *luxury* may not find their standard definitions. What is ordinarily considered luxurious may be seen as being simply comfortable by higher-class standards, this entails a blurring of concepts in certain cases. Regarding the purchase of automobiles, Saudis in general tend to opt for high quality makes that are loaded with Super Extra Luxury (SEL) features. A walk or a ride around the busy streets of Riyadh city would reveal that SEL vehicles are by no means a scarce commodity. For a large segment of the Saudi society, luxury is not a privilege as much as it is a way of life.

### *1.2. Uniformity of attire*

The uniformity of the dress code in Saudi Arabia is a highly sensitive social regulation that is strictly observed and abided by. Wearing anything other than the designated attire, for women as well as for men, is considered a rebellious and disgraceful act of deviance that entails a legal punishment. Potentially, this strict adherence to dress code can have significant repercussions on the individual’s behavior. The uniformity of attire leaves no room for showing off distinction. The natural urge to demonstrate personal notoriety and excellence cannot be held back, and must, therefore, find another means of expression. Here, the private automobile seems to be a popular outlet. Given the fact that there are no restrictions imposed on car appearances, Saudis generally are fond of the looks of their cars. They compete in buying the most expensive and luxurious cars. Sometimes, when touches of embellishment (such as curtains, pillows...) are needed, Saudis do not hesitate to add them. They also tend to change cars every now and then to keep in style or just like getting rid of one’s old garments to replace them by more stylish ones.

### *1.3. The environment and being a Bedouin*

Despite the harsh living conditions of the desert, Saudis love outdoor life. This is about the only original characteristic of the Saudi way of living that has survived the sweeping changes brought about by modern civilization. Deep in the heart, the Saudi individual is a desert person whereas desert stands for his/her real home. The daily excursions a number of Saudis make into the desert on daily basis are an obvious expression of that genuine feeling of nostalgia to desert. The above remarks on the identity of the Saudi individual are but illustrations of a panorama of complex and hidden factors that have helped shape the Saudi culture and made it what it is today.

## **2. Duality of patterning**

Lakoff and Turner (1989: 113) argue that there are four semantically autonomous categories in the world, namely spaces, objects, substances, and containers, which are used by non-autonomous abstract concepts to make them less abstract or concrete. This is known as the CTM, according to which “states, changes, processes, actions, causes, purposes, and means, are characterized cognitively via metaphor in terms of space, motion, and force” (Lakoff, 1993: 220). Lakoff and Johnson (1999: 178-79) argue that our understanding of event-structure metaphor (ESM) is governed by two basic event-structure metaphors, which make use of the primary metaphors causes are forces and changes are movements:

The location event-structure metaphor (henceforth, LESM)

States are locations (interiors of bounded regions in space)

Changes are movements (into or out of bounded regions)

Causes are forces

Causation is forced movement (from one location to another)

Actions are self-propelled movements

Purposes are destinations

Means are paths (to destinations)

Difficulties are impediments to motion

Freedom of action is the lack of impediments to motion

External events are large, moving objects (that exert force)

Long-term, purposeful activities are journeys (p. 179)

The object event-structure metaphor (henceforth, OESM)

Attributes are possessions

Changes are movements of possessions (acquisitions or losses)

Causation is transfer of possessions (giving or taking)

Purposes are desired objects

Achieving a purpose is acquiring a desired object

Achieving a purpose is getting something to eat

    Trying to achieve a purpose is hunting

    Trying to achieve a purpose is fishing

    Trying to achieve a purpose is agriculture (p. 198)

The two components of the ESM differ in the sense that one conceptualizes events as locations, the other as objects. This should remind us of the bi-dimensional nature or duality of time as represented by the time-as-an-object-in-space and the time-as-a-substance metaphor (Lakoff and Johnson, 1999: 145). The Location Event-Structure Metaphor (LESM) has three variants that enrich the LESM with other primary metaphors (Lakoff and Johnson, 1999: 203), namely, the moving activity metaphor, the action location metaphor, and the existence as location metaphor. The three variants of the LESM are illustrated below:

(1)

(a) The project has *slowed to a crawl*.

(b) She *came near* to resigning.

(c) I *removed* all the errors in the manuscript.

In (1a), the activity predicated of the project is slow motion as suggested by the choice of “crawl.” In (1b), resigning is described as a location in space to which the Experiencer was

moving. The location of the experiencer vis-à-vis the resignation is signaled through the adverb “near.” In (1c), the Experiencer is described as making errors disappear from existence by removing them from the manuscript. So, what these variants add to the initial LESM is change of motion, motion towards a location, and force exercised to reach a location.

The LESM should not be understood as precluding motion. Indeed, the variations on the LESM in (1a-c) are solid evidence for dynamism, where location is reinforced by motion as in slowed, came, and removed. Further, apart from the states are locations metaphor of the LESM, which does not involve movement, all of its other constituents do show movement to or from a given location or to a destination in space. To anticipate, the same holds for the OESM, whose most important components involve spatial motion. The duality between the LESM and the OESM can be accounted for in terms of figure-ground reversal, where the values of figure and ground change across the two poles as demonstrated in the following examples:

(2)

- (a) Harry is in trouble.
- (b) Harry has trouble.

In the LESM reading as in (2a), Harry is the figure while in the OESM reading in (2b), Harry is the ground, with trouble as a figure. These two poles have been dubbed by Lakoff and Johnson (1999: 194) “duality of patterning.”

The ESM, in particular the LESM of it, has been held to be essentially image-schematic (Peña Cervel, 2004). As two important examples of events governed by image schemas, states (states are locations) and purposes (purposes are destinations) can be mentioned. The universal, embodied nature of containers has been attested by Lakoff and Johnson (1980: 29) as follows: “we are physical beings, bounded and set off from the rest of the world by the surface of our skins, and we experience the rest of the world as outside us. Each of us is a container, with a bounding surface and an in-out orientation.” Equally important for the LESM is the path concept, which is defined by Johnson (1987: 113) as including “(1) a source, or starting point; (2) a goal, or end-point; and (3) a sequence of contiguous locations connecting the source with the goal.” Johnson (1987) qualifies the universal, embodied nature of paths. He argues that “our lives are filled with paths that connect up our spatial world” (113). Both containers and paths are spatial, and are mapped in the ESM onto non-spatial concepts.

### **3. The event-structure metaphor in AE and SA**

#### *3.1. States in AE and SA*

##### **3.1.1. States in AE**

States may include *depression, danger, coma, love, poverty, peace, harmony, debt*, etc. as per the duality of patterning (DP), states can come as containers (i.e. *being* in a state) and as possessed objects (i.e. *having/possessing* a state). The logical inference from containers and possessions is that the cognizer is either caught in a state or possesses the state as one possesses an object:

(3)

- (a) He is *in a depression*.  
 (b) He *has* a depression.

In (3a), depression is conceptualized as a location, i.e., a bounded region in space, which suggests the conceptual metaphor, states are locations/containers. The topology of a bounded region includes an interior, an exterior, and a boundary, which inferentially provide and, indeed, can not only predict other possible linguistic metaphors like *out of depression*, *in a deep depression*, etc., but also preclude the existence of certain expressions that do not conform to the image-schematic structure of containment such as \*to be on a depression, \*to be under a depression, or \*to be beside/next a depression, etc. which do not exist in English. However, in (3b) trouble is conceptualized as a possessed object as can be shown in attributes are possessions. The states-as-possession mapping predicts or entails the possibility of doing to states what one does to possessions such as getting rid of one's depression, giving someone a depression, etc.

### 3.1.2. States in SA

States in AE and SA come as LESM and OESM, which means that, in spite of AE and SA belonging to different families of languages and cultures, they adopt containers and objects as shared concepts to conceptualize states. However, AE and SA differ in terms of which states come as containers, which states come as objects, and which ones come as containers and objects simultaneously as will transpire in the following tables.

**Table 1: Examples of states in AE according the DP**

Conceptual metaphor	State
States are locations	<i>Danger</i> <i>Coma</i> <i>Love</i> <i>Peace</i> <i>Harmony</i>
States are possessions	<i>Problem</i> <i>Flu</i> <i>Disease</i> <i>Blood pressure</i>
States are locations- possessions	<i>Depression</i> <i>Poverty</i> <i>Debt</i> <i>Trouble</i>

**Table 2: Examples of states in SA according the DP**

Conceptual metaphor	State
States are locations	-khatar- خطر (danger) - gayboba- غيبوبة (coma)

	- alhub- الحب (love) - wardhah- ورطة (trouble) - saadah- سعادة (happiness)
States are possessions	- mushkilah- مشكلة (problem) - bard- برد (flu) - maradh- مرض (disease) - dhagat- ضغط (blood pressure) - dayn- دين (debt) - anhyar asabi- انهيار عصبي (depression)
States are locations- possessions	- faqer- فقر (poverty) - amen- أمن (peace)

There is a general tendency in SA for states to be possessions, which implies that fewer states come as both locations and possessions. This tendency may have the consequence of offering the users of SA less possibility for construal of some states. Such skewing of states between AE and SA may require extra effort on the part of translators to determine the right option for translating states either into AE or SA.

### 3.2. Changes in AE and SA

#### 3.2.1. Changes in AE

Changes are actually alterations that occur to states. Since states are either locations in space or possessions, changes combine location and possession with motion, which yields either a cognizer leaving a state, or a state moving in space as illustrated below:

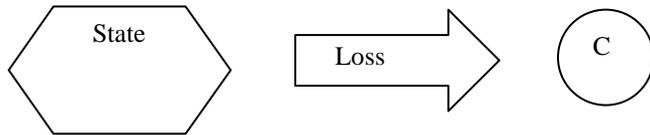
- (4)
- (a) I came out of my depression.
  - (b) My depression went away.
  - (c) His new business brought him a lot of money.

In (4a), the change is actually motion between states as presupposed by the preposition *out*. The cognizer was inside the state of depression, but left it. The in/out image schema governing the change is responsible for motion from being in a depression to being out of it, which evokes the changes are movements metaphor as in the following diagram.



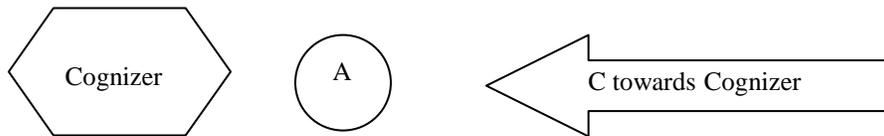
**Figure 1: Changes as movement diagram**

In (4b), however, depression is a possession, as signaled by the possessive adjective “my,” moving in space, describing the conceptual metaphor changes are movements of possessions. The difference between states and changes is that states are static but changes are dynamic, a difference that explains the use of verbs such as “to be” with the prepositions *in*, *out*, *on*, etc., and “to have” with states, and the use of motion verbs such as *come*, *go*, *fall*, *enter*, etc., with changes. The following figure shows the state mutating into a change (C), thus leaving the state as diagrammed below:



**Figure 2: Changes as movements of possession diagram (Loss)**

As per the logic of objects and possessions, since changes are movements of possessions, this movement can be characterized either by loss of one’s possessions (as in 4b above) or an acquisition of a new possession (as in 4c above), whereby instead of losing, the cognizer gains something as a change of state as diagrammed below:



**Figure 3: Changes as movements of possessions diagram (acquisition)**

Note the direction of the arrow pointing to the direction of the cognizer, who witnesses the movement of an acquisition (A) towards the self.

### 3.2. Changes in Arabic

In the previous sub-section, it has been noted that Saudi Arabic has a preference for conceptualizing states as possessions. For this reason, changes in SA are more of like movements of possessions than movements of changes:

**Table 3: Examples of changes in SA**

Conceptual metaphor	Linguistic metaphor
Changes are movements	- rah mini alkawf- راح مني الخوف (Fear left me)
Changes are movements of possessions	- mihnati mishit- محنتي مشيت (My trouble went away) - ashabi karagoni min wardati- أصحابي خرجوني من ورطتي (My friends helped me leave my trouble) - ahli talaoni min mushkilti- أهلي طلعونني من مشكلتي

	(My relatives helped me leave my problem)
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### 3.3. Causes in AE and SA

#### 3.3.1. Causes in AE

Since causes are external to the cognizer, they do not exist as possessions. In the LESM reading, causes combine location with force as a form of causation, yielding the conceptual metaphor, causes are forces. However, in OESM reading, causes combine objects with force, yielding the conceptual metaphor, causation is a transfer of possessions as it is exemplified in the following examples:

- (5)
- (a) The news *propelled* the stock market to record heights.
  - (b) The noise *gave* me a headache.

In (5a), the trajector (the news) is exerting force on the landmark (stock market), which causes the stock market shares to soar to record levels. It should be noted that *propelled* can be traced back to an up/down image schema, which can be paraphrased as “caused the stock market to go up,” presupposing that the shares were at a lower location on the stock market indices. Some of the verbs associated with causation include *bring, throw, drive, pull, push, move, propel, thrust*, etc. In (5b), however, causation has to do with causes as objects, which triggers a set of entailments in line with what can be done with objects in our experience such as *having, getting, taking, giving, losing*, etc. them.

Explaining the motivation for force as an image schema for talking about events, Johnson (1987: 42) argues that right from our very early age, we experience reality as “one massive series of forceful causal sequences.” Johnson (1987: 43-45) has proposed that the force we experience in our socio-physical environment has a certain number of characteristics encapsulated under “*a gestalt structure of force*,” i.e., a “unified whole within our experience and understanding that manifests a repeatable pattern or structure.” It is experienced through “interaction,” and it has “directionality,” “a path of motion,” “origins or sources,” “degrees of power or intensity,” and “a structure or sequence of causality.”

Johnson (1987: 45-48) has isolated seven common force structures that are pre-linguistically present in our environment, namely,

(i) *Compulsion*

“Everyone knows the experience of being moved by external forces, such as wind, water, physical objects, and other people.”

(ii) *Blockage*

“In our attempts to interact forcefully with objects and persons in our environment, we often encounter obstacles that block or resist our force.”

(ii) *Counterforce*

“Here two equally strong, nasty, and determined force centers collide face-to-face, with the result that neither can go anywhere.”

(iv) *Diversion*

“A variation on the previous gestalt is one in which a force vector is diverted as the result of the causal interaction of two or more vectors.”

(v) *Removal of restraint*

“The removal of a barrier or the absence of some potential restraint is a structure of experience that we encounter daily.”

(vi) *Enablement*

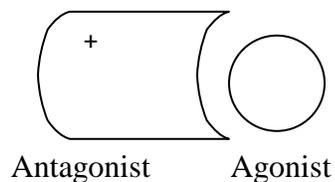
“If you choose to focus on your acts of manipulation and movement, you can become aware of a felt sense of power (or lack of power) to perform some action.”

(vii) *Attraction*

“The force is not gravitational, in the standard sense, but it is a kind of gravitation toward an object.”

It goes without saying, as Johnson points out, that these are not the only force structures present in our environment.

To borrow Talmy’s (2000: 415) terminology, causation “involves an Agonist with an intrinsic tendency toward rest that is being opposed from outside by a stronger Antagonist, which thus overcomes its resistance and forces it to move.” This can be diagrammed for the instances of causation as follows:



**Figure 4: Causation as Antagonist acting on Agonist**

Causation can be conceived as a force exerted on Agonist by an unhindered Antagonist. The + in the Antagonist (Ant) signals the force exerted by the Ant on the Agonist (Ago). The Ant is the causal force, and the Ago can be either the cognizer or a concept (e.g. a country). In conceptual metaphor terms, this is causation is force or causes are forces.

### 3.3.2 Causes in SA

As spelled out earlier on, AE uses verbs such as *bring, throw, drive, pull, push, move, propel, thrust*, etc. to conceptualize causation in its duality of forces and transfer of forces. SA uses verbs of causation, where force is embedded into the verb (e.g. make and force) as in English or can be expressed through the emphatic form as in (jannatni) جئننتني , which doubles the consonant (ن) “n” in the verb.

**Table 4: Examples of causation in SA**

Conceptual metaphor	Linguistic metaphor
Causes are forces	خالاني أغانر الشغل Khalani akader alshogil (He made me leave the job) غصبني

	kasabni (He forced me) جنتني jannani (She made me mad )
Causation is a transfer of possessions	ما جابلي إلا وجع الراس Ma jab li ala wajaa alraas (He only brought me headaches)  السيول أخذت كل أغراضي Alsyol akadat kul akradi (The floods took all my belongings)

### 3.4. Actions in AE and SA

#### 3.4.1. Actions in AE

Since actions have to do with motion in space, they are captured in the primary conceptual metaphor, actions are self-propelled movements, which yields the following sub-metaphors in AE (Lakoff, 1993: 220-22; Lakoff and Johnson, 1999: 188):

**Table 5: Actions are self-propelled movements in AE**

Conceptual metaphor	Linguistic metaphor
Aids to action are aids to movement	Getting the grant gave us just the boost the project needed.
Manner of action is manner of motion	She is falling all over herself.
Careful action is careful motion	I'm walking on eggshells.
Speed of action is speed of movement	He flew through his work.
Freedom of action is the lack of impediment to movement	I don't want anything to tie me down.
Suspension of action is the stopping of movement	They halted the project.

As is clear from their name, actions are par excellence conceptualized as movements in space, which explains why actions do not have a version of the OESM.

#### 3.4.2 Actions in SA

Since actions have to do with motion in space everywhere, they are also captured in the primary conceptual metaphor, actions are self-propelled movements in SA as shown in the table below:

**Table 6: Actions are self-propelled movements in SA**

Conceptual metaphor	Linguistic metaphor
Aids to action are aids to movement	ضبطلي - سحب علي - عززلي - كو علي
Manner of action is manner of motion	ماشي على البيض - ماشي بالشويش - جاب العيد - ماشي حبة حبة
Careful action is careful motion	المشروع ماشي حبة حبة - ماشي على البيض
Speed of action is speed of movement	طار للشغل - معشق خامس
Freedom of action is the lack of impediment to movement	رئيسي رابطني - نشبلي - حجرلي
Suspension of action is the stopping of movement	قفل - كنسل - وقفنا العمل - سكرنا

It is interesting to note that SA uses some culture-specific linguistic metaphors in the conceptualization of actions such as رابطني (tying me down), which is reminiscent of how Arabs tie down animals with a rope in the ground; معشق خامس (shifting to fifth gear), which is reminiscent of the extent to which cars count in Saudis' lives as to conceptualize actions with the movement of cars; حبة حبة (grain by grain), which adopts the size of a grain of wheat to conceptualize actions as performed slowly and carefully.

### 3.5. Difficulties in AE and SA

#### 3.5.1. Difficulties in AE

Difficulties are so much linked with actions. Since actions are movements, difficulties encountered in acting are impediments to our movements as captured by the conceptual metaphor, difficulties are impediments to movements as illustrated in the following examples:

**Table 7: Difficulties are impediments to movement in AE**

Conceptual metaphor	Linguistic metaphor
Difficulties are blockages to action	She's trying to get around the regulations.
Difficulties are due to the features of the terrain	We've been hacking our way through a jungle of regulations.
Difficulties are burdens	She's weighed down by a lot of assignments.
Difficulties are counterforces	He's holding her back.
Difficulties are due to the lack of an energy source	We're running out of steam.

In AE, a difficulty may be conceptualized as a blockage to motion but it can be gotten around by the cognizer. This is inherited from the physical domain, whereby the impediment takes a lot of energy for the cognizer in order not to be confronted by it. A different way of conceptualizing difficulty arises from our experience with physical impediments to real motion, where the cognizer has to cope with the morphological features of the terrain as suggested by hacking and jungle. A difficulty may also be conceptualized as a burden on the cognizer, who has to spend extra effort to cope with it. A difficulty may be seen as a counterforce exerted by the cognizer against the force of motion. A difficulty may arise from lack of an energy source to sustain it.

### 3.5.2. Difficulties in SA

Compared to difficulties in AE, difficulties in SA use the same sub-metaphors of difficulties are impediments to movement except for one: difficulties are due to the features of the terrain. Such a conceptual metaphor may not have arisen in SA because the terrain of Saudi Arabia is so spacious and open that accidents do not count for Saudis because they do not seem to have a problem with space.

**Table 8: Difficulties are impediments to movement in SA**

Conceptual metaphor	Linguistic metaphor
Difficulties are blockages to action	ناشب في الزحمة - نشبلي - استعدلي
Difficulties are due to the features of the terrain	
Difficulties are burdens	شاييل هم الإمتحان
Difficulties are counterforces	نشبلي - استعدلي
Difficulties are due to the lack of an energy source	انهد حيلي - طفيت

### 3.6. Purposes in AE and SA

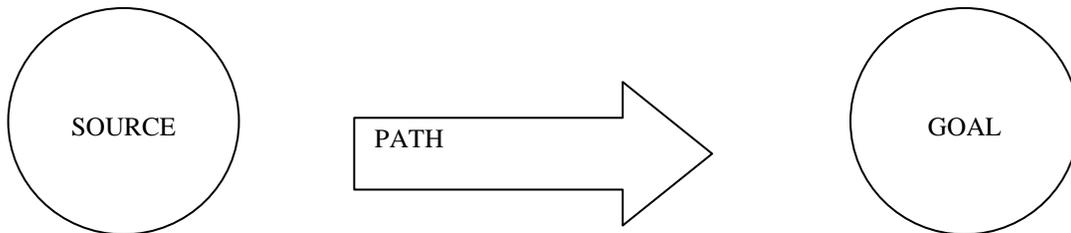
#### 3.6.1. Purposes in AE

Purposes involve a dual structure in English as in the following examples:

- (6)
- (a) We've reached the end (LESM).
  - (b) She is pursuing an impossible dream (OESM).

In (6a), purposes are destinations while in (6b) purposes are desired objects.

In the LESM version, purposes are destinations, which are governed by the source-path-goal schema as in the following figure:



**Figure 5: Source-path-goal schema governing purposes are destinations**

In the LESM reading, i.e. source-path-goal schema, purposes show the following sub-metaphors of purposes are destinations:

**Table 9: Purposes are destinations in AE**

Conceptual metaphors	Linguistic expressions
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Achieving a purpose is reaching a destination	The goal is a long way off.
Lack of purpose is lack of direction	He is just floating around.
Means are paths	She did it the other way.
Starting a purposeful action is starting out on a path	We have taken the first step.
Making progress is forward movement	We made lots of forward movement.
Amount of progress is distance moved	We've covered lots of ground.
Undoing progress is backward movement	It is time to turn around and retrace our steps.
Expected progress is a travel schedule	We're behind schedule on the project.
Lack of progress is lack of movement	We are going nowhere with this.

It should be noted that the linguistic expressions realizing the conceptual metaphors governed by purposes are destinations come to fill in one of the members of the source-path-goal schema. For instance, although the linguistic metaphor realizing achieving a purpose is reaching a destination in Table (9) seems to target the goal, it actually situates the purpose to be attained as very far from the goal and closer to the source. On the other hand, the linguistic metaphor realizing amount of progress is distance moved in table (9) situates progress in the purpose closer to the goal.

However, in the OESM of purposes are desired objects, purposes offer the following conceptual metaphors (Lakoff and Johnson, 1999: 197):

**Table 10: Purposes are desired objects in AE**

<b>Conceptual metaphors</b>	<b>Linguistic expressions</b>
Achieving a purpose is getting something to eat	This is a mouth-watering opportunity.
Trying to achieve a purpose is hunting	I'm shooting for a promotion.
Trying to achieve a purpose is fishing	I've got a line out on a good used car.
Trying to achieve a purpose is agriculture	The contract is ripe for the picking.

In terms of construal (what?!), it should be noted that AE uses more options in line with destinations than with desired objects, which safely enables us to argue for the importance of the source-path-goal schema in the life of Americans as spelled out in the variety of conceptual metaphors governed by purposes are destinations in Table 9 above.

### 3.6.2. Purposes in SA

in terms of construal?, it should be noted that sa uses more options in line with destinations than with desired objects, which safely enables us to argue that the source-path-goal schema is even more important in the life of Saudis as spelled out in the same variety of conceptual metaphors attested in AE and governing by purposes are destinations in Table 11 below.

**Table 11: Purposes are destinations in SA**

Conceptual metaphors	Linguistic expressions
Achieving a purpose is reaching a destination	وصل - وصل إلى القمة - وصل للي بيبه - حققت مرادي - وصلنا لغايتنا - على وشك Wasal-wasal ala alkimah- wasal lili yabih-haqaqt muradi- wasalna ligaitna- ala washak
Lack of purpose is lack of direction	ضايح ما يدري وين يروح - شاطح Dayaa- mayadri wayn yrooh- shatih
Means are paths	كل واحد وطريقه - أنت من طريق وأنا من طريق Kul wahed wa tariqah- ant min tariq wana min tariq
Starting a purposeful action is starting out on a path	أنا في أول الطريق - في النصف - على وشك - شرف على نهاية الطريق
Making progress is forward movement	ماشي - في تقدم
Amount of progress is distance moved	ما بقى اللي ما هان - أزحف - هدفي بعيد - هدفي قريب - مرامي أبعد من حلمك - خطوة جيدة - قطعنا شوط
Undoing progress is backward movement	نمشي خطوة ونرجع عشرة
Expected progress is a travel schedule	متأخرين
Lack of progress is lack of movement	على حطة يدريك

However, the OESM of purposes in SA offers the following conceptual metaphors (Lakoff and Johnson, 1999: 197):

**Table 12: Purposes are desired objects in SA**

Purposes are desired objects	
Conceptual metaphors	
Achieving a purpose is getting something to eat	
Trying to achieve a purpose is hunting	صيدة
Trying to achieve a purpose is fishing	
Trying to achieve a purpose is agriculture	حصد أرباح المشروع

Clearly, SA favors destination in conceptualizing purposes. Such a preference may be motivated by the importance of the concept of journey in the life of Saudis owing to the vastness of the country and the importance of trade.

### 3. Implications for translation

The implications of the event-structure metaphor for translation are evidential in two paths. First, events such as states, changes, causes, and purposes take a dual conceptual metaphor in line with the mega conceptual metaphors: the location event-structure metaphor and the object event-structure metaphor. In other words, states are conceptualized as containers and possessions; changes as movement and movement of objects; causes as forced movements and transfer of possessions; and purposes as destinations and desired objects across languages and cultures (Lakoff and Johnson, 1999: 195).

But why do Arabs and Americans have these dualities of patterning? Space is universal - all human beings live and move in space. Objects that we can possess are also universal. The universality of space and objects is what makes the Arab and American cultures sound similar in using the location-object duality. Can we, for instance, talk about a one-to-one relationship between states in the two cultures? yes and no. Yes, because with some states in the Arab and American cultures totally overlap in terms of the kind of state and the fact that the state takes the location-object duality. Such examples include the states of poverty and trouble, etc. (to be in poverty and trouble and to have poverty and trouble in both languages and cultures). No, because some states in the Arab and American cultures do overlap in terms of the kind of state but the state in question does not take the location-object duality, i.e. they exist either as location or object only. Such examples include the states of

When translators know that the mind functions by using spaces and objects as two important categories in life, this knowledge may facilitate their job in translating states by giving them the power to predict that in many languages and cultures states are spaces and objects. However, they should also know that since different languages and cultures may focus either on spaces or objects, they might have to translate a state-as-space in one culture into a state-as-possession in another. For instance, the state “problem” is profiled in English as “I have a serious problem” (a state is a possession) while in Saudi Arabic it is profiled as أنا في مشكلة (I am in a problem), i.e. a state is a container.

It is interesting to note that SA signals changes exclusively through deictic/motion verbs such as (مشت) and (خرجوني) while English uses more prepositions than verbs to conceptualize change. Since the location-possession duality is a universal of human experience, and since English uses prepositions while Arabic verbs, translators would know how to translate a change if they know about the related state in Arabic or English. For instance, if they know a state to be conceptualized as a container using the preposition IN, it is most likely that the change would involve the preposition out. If, however, a state in Arabic uses (في), it is most likely that the change would translate using either (مشى) or (خرج).

Causes and actions are far easier to translate than many other events because they mostly use causative and action verbs in Arabic and English. So what the translator needs to know is get to which verbs are causative and dynamic in Arabic and English.

When translators know that the mind functions by using objects as an important category in life, this knowledge may facilitate their job in translating difficulties by giving them the power to predict that in many languages and cultures difficulties are objects. However, they should also know that since different languages belong in different cultures, they might translate difficulties in one culture in different language although the same conceptual metaphor is adopted in two different cultures. For instance, AE and SA share the conceptual metaphor difficulties are counterforce, yet AE uses *He's holding her back*, which involves some action mixed with force while SA conceptualizes this as استقعدلي , which does not involve action and force as much as standing on the way as a blockage to action.

When translators know that the mind functions by using destinations and objects as important categories in life, this knowledge may facilitate their job in translating purposes by giving them the power to predict that in many languages and cultures difficulties are destinations and objects. However, they should also know that since different languages belong in different cultures, they might translate purposes in one culture in different language (i.e. wordings) although the same conceptual metaphor is adopted in the two cultures. For instance, AE and SA share the conceptual metaphor lack of purpose is lack of direction, yet AE uses "He is just floating around," which is the way Americans conceptualize aimlessness as buoyancy on water while SA conceptualizes this as ضايح ما يدري وين يروح or شاطئ, which express aimlessness as loss in space, which suggests going right and left without any aim in mind. Therefore, the translator should be careful not to translate these into the two languages literally.

## Conclusion

The event-structure systems of English and SA show wide similarities at the conceptual level, whereby the two systems actually function within the same mapping of events onto space, which derives from the abstract nature of event concepts and the availability of experience with space in many, if not all, cultures. Thus, the event-structure system in SA is an extension of the physical space, inheriting its characteristic features of motion, impediment to motion, change of location, etc., and turning events as objects manipulated in this physical space. Thus, the two systems conform to Mandelblit's (1995) "similar mapping condition" (SMC) scenario.

However, one of the areas of difference between English and SA has to do with the concept of duality. Even though there are cases of "similar metaphorical concepts and similar metaphorical expressions," the data in SA conforms more to Hiraga's (1991) "similar metaphorical concepts but different metaphorical expressions" scenario. English seems to offer a wide-ranging duality for event-structure concepts, which enables its users to conceptualize experience in alternative construal. For instance, English conceptualizes states alternately as locations or objects, in that its users can show different degrees of involvement with states as locations or possessions. Consistent with the topology of the image schema of containment, the location metaphor restricts the freedom of action of the users, thus at least partly reducing their degree of moral responsibility vis-à-vis the state, while the state-as-a-possession metaphor gives them more freedom of action in dealing with it and more responsibility as is clear from the various entailments of possessions.

Another area of difference between the two cultures has to do with cultural details. For instance, SA does not seem to offer the same alternatives to its users as far as states are concerned. Or, rather its users do not like to offer themselves the same alternatives for a good reason. As has been explained earlier on and in spite of the existence of states as possessions, a state is a container in SA. Logically, if one is in a state, and if one holds being in states to be bad, why should one desire to conceptualize states as belongings when one is trying hard to come out of or leave these states?

In terms of causation, it seems that SA differs from English based on the basic-level categories used to talk about causation. While English uses verbs such as bring, throw, drive, pull, push, propel, move, etc., SA uses verbs such as xalla (cause/make to do), xarraj (cause to pull out), daxxal (cause to bring in), Talla3 (cause to lift up/go up), mašša (cause to walk along), etc., which, despite their important overlap with the English verbs for causation, describe two

important systems of schematic causation governed by the conflation of the causal sub-event with the vertical or horizontal schema, which are not found in English.

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**Title:** Zen Jesus: Teaching Religion with Meaning and Purpose

**Description:** This report is to highlight an innovating teaching model “Culturally Responsive Teaching” (CRT) and how it can help with the teaching of religion. It will also take a look at how this model can help with the Quebec’s unique Ethics and Religious Culture program. The principles Culturally Relevant Teaching provides an opportunity for educators to examine their approach to religion and show how this model can further promote open and diverse classroom settings.

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## **Zen Jesus: Teaching Religion with Meaning and Purpose**

### **Abstract**

This research report introduces the innovating teaching model “Culturally Relevant Teaching,” and how the model can be used to effectively teach religious education in both private and public schools. In this panel session, a secondary school teacher will highlight the educational benefits of the Culturally Relevant Teaching model as well bring to the attention of the participants some of the current approaches to religious education. Currently, the scholarly literature indicates that teachers value the teaching of moral and religious education, however, continue to struggle with the successful delivery of its content and complexities.

In this panel session, Professor Jafralie will present the model, Culturally Relevant Teaching and outline what it entails. Also, participants will be exposed to the challenges surrounding the existence of religious education, and different arguments from a number of countries. The research report will focus on the contentions in religious education, the unique path taken by Quebec, the role and impact that religions has on evolving and pluralistic societies and most importantly the role education plays in the teaching of religious education in an intellectual and culturally sensitive manner .

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BUILDING CAPACITY FOR TEACHING WRITING WITH RIGOR: TEACHERS'  
PERSPECTIVES ON WHERE TO START

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## **Abstract**

### *Building Capacity for Teaching Writing with Rigor: Teachers' Perspectives on Where to Start*

## **Research Objectives**

The purpose of this mixed-methods study was to employ multiple measures to examine the influences of intensive professional development, delivered through a university course devoted exclusively to writing, on teacher's dispositions, understandings, and daily practices. Furthermore, this study sought to understand teachers' perceptions of factors in their context such as educational policy, accountability, and district resources that influenced their ability to teach writing. This study has implications for administrators and policy makers, school improvement teams, and teacher educators interested in engaging in or implementing writing professional development aligned with current, more rigorous writing standards; such as in the Common Core State Standards (CCSS) in the United States.

Guiding questions for this inquiry include:

1. What shared perceptions of writing contexts and their effects on writing practices exist between practicing teachers, grades 1-6.
2. How do these perceptions of writing contexts and practices differ between teachers who have taken a university graduate course devoted exclusively to K-8 writing and those who have not?
3. How do these similarities and differences in teachers' perceptions of their writing context and practices link to their actual classroom practice and the university course in writing?

## **Introduction**

Lack of progress in students writing achievement has been linked to variability in teachers' knowledge, skills, and dispositions regarding writing (Troia, Lin Cohen, & Monroe, 2011). Many teachers feel that they lack the knowledge, skills, and strategies they need to facilitate children's emerging competencies as writers (Troia & Graham, 2003; Troia & Maddox, 2004). However, few resources have been allocated to alleviate teacher's concerns about their own lack of competency in the area of writing instruction. Levels of writing proficiency required to successfully participate in today's digital work place now require levels of writing that are so ambitious, ignoring these concerns will be impossible (Calkins, Ehrenworth, & Lehman, 2010).

## **Theoretical Framework**

The complexities of integrating the cognitive, social, and emotional aspects of the writing processes are an obstacle to both writers and those who teach it (Hayes, 1996; Vygotsky, 1978; Bruning & Horn, 2000; Bereiter & Scardamalia, 1987; Bahktin, 1981). However, the literature on teacher professional development indicates that teachers' self-efficacy improves when they see strategies and skills modeled, decompose strategies, and then have opportunities to apply and approximate these new practices in everyday practice (Hawley & Valli, 1999; Grossman, 2005). While engaging professional development experiences practicing teachers need time to reconstruct their practice through action research, reflection, and discussion of their own lessons and student work (Garet, Porter, Desimone, & Birman, 2001; Lieberman & Miller, 2008; Quick, Holtzman, & Chaney, 2009). Last, student achievement improves when teachers develop deep content knowledge of the subjects they teach as well as the pedagogy specific to the content (Hill, 2007; Carpenter, Fennema, Peterson, Chiang, & loef, 1989; Shulman, 1987; Sykes, 1999).

## **Methods**

### ***Context***

Participants in this study included twelve teachers, grades 1-6, from five different school districts, within the same northwestern state. All participants had a Masters Degree, Reading Endorsement, or equivalent units. Six of the teachers participated in a university graduate level writing methods course. This course engaged students in learning opportunities which modeled research-supported writing strategies and facilitated the joint construction of content knowledge and dispositions pertaining to writing. The control group teachers had not experienced any significant professional development in writing.

Participants who had the intensive professional development all took the same university course sometime over the preceding five years. This 3 credit, semester-long course focused exclusively on writing instruction and was taught by the same instructor, with experience and research in writing.

A triangulation mixed-methods design (Creswell & Plano, 2007) was purposefully selected for its ability to not only triangulate the results from the different data sources, but also to elaborate on and clarify the results from one method, with the results from the other method (Greene, Caracelli, & Graham, 1989).

### ***Data Sources***

Teachers participated in a response-guided interview and four classroom observations over the 2011-2012 school year. Data was collected using The Writing Observational Framework (WOF), (Henk, Marinak, Moore, & Mallette, 2004) as well as observational field notes and follow up interviews. To further strengthen links between teacher practice and the methods

course four observations were conducted while the course was in session and course documents were surveyed.

### ***Data Analysis***

Quantitative data and qualitative data were analyzed separately and then transformed, consolidated, and compared to establish their points of convergence and disagreements (Onwuegbuzie & Teddlie, 2003; Creswell & Plano, 2007; Greene, 2007). The WOF data was analyzed with independent sample t-tests on SPSS. Observational notes were coded using a deductive coding scheme developed a priori (Troia, Lin, Cohen, & Monroe, 2011). Analytic inductive coding was applied to the interview data. Frequency counts, data displays, and individual narrative summaries were created (Miles & Huberman, 1994) for all qualitative data. Throughout coding, similar responses were grouped and regrouped through constant comparison (Glaser & Strauss, 1967) and descriptive and analytic memos (Miles & Huberman, 1994) provided further analysis. Chi Square analysis was performed on relevant interview data to provide qualitative and quantitative linkages (Miles & Huberman, 1994). Data analysis included consensus conversations, member checks, peer debriefings, as well as 27% interrater checks on observational data and 25% inter-coding checks on interview data.

### ***Outcomes***

Teacher practice, and subsequent student learning experiences, were shaped and influenced by many factors outside the teacher's immediate control. Three elements in teachers' contexts emerged as influential: (1) their preservice and inservice preparation to become teachers of writing, (2) resources provided by their district for teaching writing including professional development opportunities, and (3) accountability for writing instruction by their state, district, school, and university.

### ***Perceptions of Preparation to Teach Writing***

Significant differences existed between teachers who experienced the writing professional development (PD) and teachers who had not (NPD) regarding their perceptions of their preparation to teach writing. Teachers had strong opinions about their university preservice and inservice preparation. All six PD teachers felt they had acquired the necessary content knowledge and confidence to teach writing. Unfortunately, this was true for only two teachers who had not taken the course,  $X^2(1) = 6.00, p = .02$ . Conversely, all six NPD teachers had a desire for more writing professional development while only one PD teacher felt this was necessary,  $X^2(1) = 8.57, p = .003$ .

### ***Perceptions of Resources Dedicated to Teaching Writing***

Ten of the 12 teachers stated that there was no specific writing curriculum provided to them by their districts except supplementary sections of their Basal reading programs. Amy said, "It doesn't seem like there's a defined writing curriculum. I've heard some different things from

different people, but since I've been here we haven't really had any professional development for writing instruction." Like Amy, seven of the 12 teachers reported they had little to no professional development in writing instruction and the rest had only received compacted teacher inservice workshops, which have little effect in changing teacher practice.

### ***Teacher's Perceptions of State, District, and School Accountability***

Teachers in both groups felt there was a lack of accountability to teach writing. Although there has been stringent accountability for student performance on standardized tests in reading, language arts, and math, accountability for writing performance in the United States has been nearly non-existent (Calkins, et.al., 2010). Ninety-six percent of all teachers in this study reported that the writing performance of their students was not tested or monitored by their state or district. One participant explained, "I mean we're in a situation now economically and everything else and we're looking at end results and writing is not one of them." Another teacher shared the result this has had on her practice, "It is just the unfortunate nature of not being tested on writing; it is one of the things that gets side lined."

### ***Teacher's Perceptions of University and Teacher Certification Accountability***

Few universities require a writing methods course for teacher certification (National Writing Project, 2006). Not surprisingly then, this study found that only 1 NPD teacher felt writing instruction was valued by her university compared to 5 out of 6 PD teachers,  $\chi^2(1) = 5.33$ ,  $p=.02$ . This difference in viewpoint is significant and followed through to a significant difference in the value teachers placed on writing instruction. Three NPD teachers made statements that suggested they did not place writing on an equal footing with other subjects. This viewpoint was never expressed by PD teachers,  $\chi^2(1) = 4.00$ ,  $p=.05$ . On the contrary, five of the six PD teachers made statements that suggested they valued and made time for writing.

### ***Conclusions***

In this study, differences in teachers' preparation to teach writing played a significant role in shaping teachers' perceptions and understandings about writing. These factors influenced their daily practice and most importantly their students' learning opportunities. Students of teachers who were confident in their abilities to teach writing taught writing more often; demonstrated and enacted more research supported instructional practices, and provided their students with more effective learning opportunities to become successful writers.

While all teachers in this study agreed that there was little accountability, resources, or professional development provided by their districts or state for writing instruction, it was teachers who took the course, who overcame these obstacles and were committed to teaching writing well.

### *Implications for Educational Leadership and Policy*

The findings of this study call for policy makers, departments of education, and school districts to not only increase accountability for student writing performance, but to partner that pressure with targeted resources, curriculum alignments, and professional development. Professional development needs to provide teachers with experiences that build positive teacher dispositions, deep subject matter knowledge, and knowledge of effective practices in writing instruction.

As well, universities and their accrediting bodies should pool their collective expertise to develop and require powerful learning experiences for developing teachers of writing. In this study, unequal learning opportunities for teachers resulted in inequities in student learning opportunities. Universities could fill the existing gap between what teachers are prepared to teach and what students are being asked to do by requiring dedicated writing methods courses for both preservice certification and graduate work in literacy (National Commission on Writing, 2003). Additionally, tests that measure teacher competencies should hold candidates accountable for demonstrating knowledge of writing subject matter knowledge and pedagogical practices unique to writing with the same rigor required for reading.

Aiding teachers in improving their capacity to teach writing will require strong leadership and a commitment to resources from those in roles of influence and leadership. Teachers will need partners who can set in place policies and provisions that provide for the development of their dispositions, knowledge, and skills.

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# Development of the Psycho-Educational Program for Junior High School Students to Deepen the Self-Awareness of Emotions

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## Purpose

Lack of development in children's interpersonal skills has been attributed as a background factor to issues related to maladjustment including refusal to attend school and bullying. In recent years, social skills training (hereinafter, "SST") has been implemented actively in order to improve children's interpersonal skills. SST programs that have been conducted in Japan targeting toward elementary and middle school students so far have the following skills as common target skills of the training: "how to invite your friends", "how to use kind words", "how to ask for favors politely", "how to decline politely", and "how to control one's feelings and emotions." Most training methods use procedures such as instruction, modeling, rehearsal, and feedback in order to make the target skill entrenched (Emura & Okayasu,2003; Fujieda & Aikawa,2001; Honda, Ohshima, & Arai,2009; Ishikawa, Iwanaga, Yamashita, Sato, & Sato,2010).

On the other hand, Honda (2007) and Honda, Ueyama & Suzumura (2010) positions social skills to be a procedure to express empathy, morality, and pro-social behavior. They stipulate that in order to be able to engage in pro-social behavior, not only does one need to possess social skills, but empathy needs to have been developed within one's internal side; they state that this is crucial as a prerequisite. Honda (2007) proposed that the following factors are important in the development of empathy: a) for emotions to have been sufficiently differentiated; b) being able to understand one's own emotions; c) being able to understand others' emotions; and d) being able to understand what the others would like one to do with such emotions.

In particular, students who suffer from LD, ADHD, and Asperger's syndrome may have several difficulties due to the characteristics of their disabilities. They might have difficulties in understanding the slight difference in nuances, controlling their own emotions, and in reading other people's feelings, emotions, and intentions. Such

difficulties can often become a cause of interpersonal issues and conflicts.

For example, even if students learn the skills for “asking for favors politely” or “declining politely”, if they are unable to understand at a specific point whether they are sad, irritated, or nervous, they may not know what they themselves would like to do. Therefore, they may be unable to use the skills and turn them into action. Furthermore, learning only how to control one’s feelings and emotions will not result in the student being able to control their feelings and emotions well if they cannot accurately perceive their feelings and emotions at the time to begin with. Emotional intelligence (EI) is a concept related to emotions in such interpersonal relationships. EI is intelligence and skills for perceiving, expressing, and understanding one’s own and others’ emotions. EI is believed to come into use mainly during interpersonal communication settings (Komatsu & Hakoda,2011). Mayer & Slovey (1997) postulated that emotional intelligence consists of the four factors of : I .perception, appraisal and expression of emotion; II .emotional facilitation of thinking; III .understanding and analyzing emotions; employing emotional knowledge; and IV.reflective regulation of emotions to promote emotional and intellectual growth. In the past, the importance of emotional intelligence within interpersonal relationships has been raised in Japan. However, there are virtually no programs for children that aim to develop skills and knowledge that correspond to emotional intelligence.

Therefore, this study aims to develop a new psycho-educational program (hereinafter, “E-pro”) those objective is to deepen the self-awareness of own emotions as part of social skills training for middle school students.

## Method

### *The development of the program*

**The aim of the program:** The goals and sub-goals of E-pro are listed in Table 1. E-pro is a program for middle school students developed with the aim of deepening self-awareness of one’s own emotions. As elements for deepening self-awareness, We supposed that the 4-factor model of: Factor I :Perception appraisal and expression of emotion and Factor III:Understanding and analyzing emotions; Employing emotional knowledge are significant.

In order to achieve its goal, the following eight sub-goals have been set for E-pro: ① to become able to perceive one’s own emotions; ② to become able to perceive one’s emotions by differentiating them; ③ to attain a wide variety of terms to express one’s emotions; ④ to become able to put a name to the emotions one is feeling; ⑤ to become able to notice the true emotions behind the emotion that is being felt superficially or is being said; ⑥ to become able to express various emotions behind the emotion that is being felt superficially or is being said by verbalizing such background emotions; ⑦ to understand the mechanism in which emotions are generated; and ⑧ to understand that emotions are not determined by events, but different emotions are generated depending on how such events are perceived. Sub-goals ① to ④ correspond to Factor I , while sub-goals ⑤ to ⑧ correspond to Factor III.

**The content of the program:** Table 2 examines the specific activities and their methods to achieve the goals, turning them into a program.

**Table 1** The goals of the program

Goal : Deeping self-awareness of one's own emotions	
Sub-goals	Correspondence with 4-factor model of Mayer & Salovey(1997)
①To become able to perceive one's own emotions	Factor I : Perception appraisal and expression of emotion
②To become able to perceive one's emotions by differentiating them	
③To attain a wide variety of terms to express one's emotions	
④To become able to put a name to the emotions one is feeling	
⑤To become able to notice the true emotions behind the emotion that is being felt superficially or is being said	FactorIII: Understanding and analyzing emotions: Employing emotional knowledge
⑥To become able to express various emotions behind the emotion that is being felt superficially or is being said by verbalizing such background emotions	
⑦To understand the mechanism in which emotions are generated	
⑧To understand that emotions are not determined by events, but different emotions are generated depending on how such events are perceive	

**Table 2** Program content

	Program name	Program content	Sub-goals
1	Emotion Map	An activity that utilizes the emotion map that the authors developed. An emotion map sample (Figure 1) is shown to participants. After its content is briefly explained, the participants are asked to create two axes of “pleasant – unpleasant” and “excited – calm” on the floor using ropes. Next, the instructor will give different topics, using phrases such as “when....” (for example, “when the dinner that is served when you get back home is your favorite dish” or “when you make a mistake in front of many people”.) The participants then have to contemplate how they will feel and what kind of feelings and emotions they will experience in such situations. They walk on the two-dimensional plane until they reach a point which best fits their response. The instructor then will ask each participant one by one, “How would you express this feeling/emotion in words?”	① ②

2	Creating “My” Emotion Map	Prepare an A4 sheet of paper that has the two-dimensions of “pleasant-unpleasant” and “excited – calm” and thirty seven strips of paper that have emotions (i.e., ‘sadness’, ‘anger’, ‘boredom’, and ‘happiness’) written on them. The participants have to first think at which position of the two-dimensional space does each word of emotion fit the best for them before mapping the emotions. The participants create their own My Emotion Map by coloring or drawing pictures that match the image of emotions that were laid out.	② ③
3	Taking a Journey of Emotion	This is an activity where participants engage in self-reflection in a manner that seems like they are going on a trip to find the true nature of one’s own emotions using the “My Emotion Map” created in the second session. This is a practice which involves naming the emotion one feels using highly-abstract materials, such as photos, music, and drinks. The participants discuss in a group the feelings and emotions they are experiencing at that time as they look at the presented photos, listen to music, and drink juice. With a participant that cannot describe his/her feelings and emotions well with words, the instructor helps the participant find an emotion that fits the best by traveling on the map together while asking questions such as, “Is the present feeling/emotion pleasant or unpleasant? Calm or excited? And to what degree?”	④
4	The Iceberg In the Mind (1)	This is an activity that uses the “The Iceberg in the Mind Worksheet ver.1” that the authors have created. When Japanese youths express negative feelings and emotions, they frequently use terms such as “I’m annoyed”, “this bugs me”, and “this sucks” in an ambiguous manner. Therefore, at first, each participant is asked to give one specific setting where they feel something is “annoying”, “bugs them”, or “sucks” (for example, being insulted by someone you don’t like, or when a friend decides on the future course path first). Next, the instructor poses a question by saying, “if the tip of the iceberg is a feeling and emotion like, ‘annoyed’, ‘bugging’, and ‘sucks’, perhaps there are many feelings and emotions under the iceberg that cannot be seen, being hidden away by the ocean.” Each participant writes down on his/her worksheet the various feelings and emotions that lie deep in the mind using My Emotion Map.	⑤ ⑥

5	The Iceberg In the Mind (2)	This is an activity that uses “The Iceberg in the Mind Worksheet Ver.2” that the authors have created. The worksheet has a section where one writes down situations where one experiences uncomfortable feelings and emotions, and a section where one writes down the cognition→ emotions →and behaviors, in order from the bottom of the iceberg. Firstly, the participant is asked to write down a setting where s/he experiences bad feelings and emotions. Each participant is then asked to write down what kind of emotions they are experienced at that point, and what kind of action is taken. Furthermore, the participants are also asked to write down what kind of thoughts they have at that time (how they perceive the event). Next, the participants contemplate to which emotion these thoughts are linked, and in turn, to which actions such emotions are linked by connecting them using arrows.	⑦ ⑧
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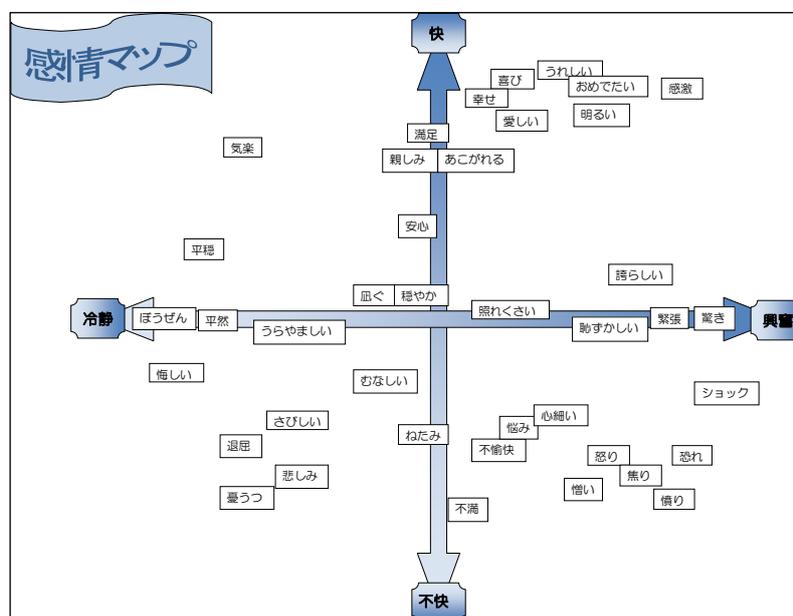


Figure 1 Sample of an emotion map

**Practice method of the program**

**Program format:** E-pro was conducted as part of an SST program for middle school students. The instructors were the three authors and a student majoring in psychology, a total of four people. The SST program has been constructed to be conducted for a total of ten sessions at a rate of once a month, with each session being 2.5 hours. E-pro was conducted in the first half of the program from sessions 1 to 5. The first program session consisted of a warm-up (approx. 45 min), the main activity (approx. 75 min), and cooling down and reflection (approx. 30 min). E-pro was conducted during the main activity

time. During the warm-up segment, self-introduction, a one-minute speech, and facial stretching using facial expressions were conducted. For the “reflection” segment, the group as a whole looks back on the day’s activity during a free conversation after each participant has written down on the self-reflection sheet provided. The items in the self-reflection sheet include current feelings/emotions, why the participant came to experience such feelings/emotions, new things they noticed through the activity, and future goals.

**Subjects:** this program’s subjects were 10 middle school students (5 males, 5 females) who applied for the SST program since they experienced difficulties in interpersonal relationships. Among these 10 students, there were students who had been diagnosed with Asperger’s syndrome and ADHD by professional bodies. Intake interviews were conducted with all participants and their guardians prior to the program. The programs were conducted by separating the students by gender.

### ***Measuring effectiveness***

**Emotional intelligence scale for middle school students:** in order to measure the program’s effectiveness, the participants were asked to give answers about the emotional intelligence scale for middle school students before the start of the program (May) and after completing the program (September). The emotional intelligence scale for middle school students was developed by Toyota and Sakurai (2007), and comprises the two scales of J-WLEIS (Japanese Version of Wong and Law EI Scale) for middle school students and J-ESCQ (Japanese Version of Emotional Skills & Competence Questionnaire) for middle school students. J-WLEIS for middle school students consists of four factors and sixteen items of “evaluating and perceiving others’ emotions” (4 items), “using emotions” (4 items), “adjusting one’s own emotions” (4 items), and “evaluating and expressing one’s own emotions” (4 items). J-ESCQ for middle school students consist of “expressing and naming emotions” (6 items), “perceiving and understanding emotions” (8 items), and “controlling and adjusting emotions” (7 items). The participants were asked to respond to all items using a 4-point scale (1. Strongly disagree; 2. Slightly disagree; 3. Slightly agree; and 4. Strongly agree).

**Self-reflection sheet:** A self-reflection sheet was prepared for each session in order to evaluate the effectiveness of the program from unrestricted reactions of the participants. Before the start of each program, participants select from stickers depicting various emotions drawn one that best describes their current feelings. Then the participant wrote down freely why they feel this particular feeling. Similarly, the participants selected a sticker after the end of the program and wrote down freely the reason for their choice. Furthermore, at the end of the activity, the participants were also asked to freely write down something new they noticed and their goals for interpersonal relationships.

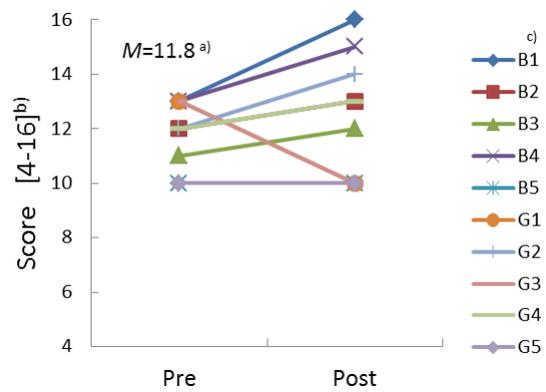
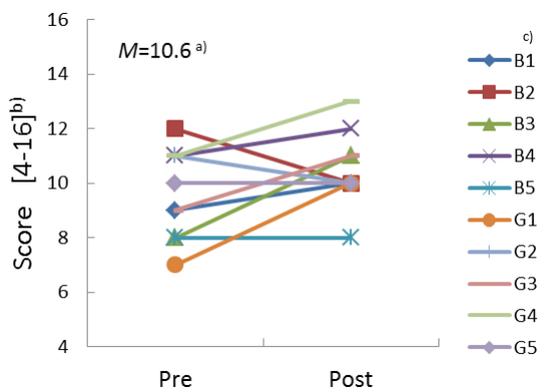
## **Result and Discussion**

### ***Emotional intelligence scale for middle school students***

In order to examine the effect of the program, a *t*-test that corresponded to the seven scales of emotional intelligence scale was conducted. The results showed that there were no statistically significant differences in any scales, and the average scores after the program weren’t changed compared to before the program. Although no

statistically significant differences were seen, in light of the fact that sample size for this study was small ( $n=10$ ), the changes in scores of the 10 participants before and after the program for seven scales were rendered into graphs as a reference. The changes in scores were verified using the graphs. The results showed that in “adjusting one’s own emotions” and “evaluation and expression of one’s emotions” in J-WLEIS for middle school students, 6 out of 10 participants had higher scores after the program compared to before the program (Figure 3,4). And with 2 showing no change, and 2 having lower scores after the program. Those two participants had a pre-program score that was higher than the average score for middle school students. In particular, in “adjusting one’s own emotions” the participants that had low pre-program score saw a significant rise in points.

“Evaluating and expressing one’s emotions” deals with understanding the various feelings and emotions within oneself well. It is a scale that is directly related to the sub-goals of E-pro, which was developed for this study. The results showed that E-pro developed for this study, has a certain effect toward goals set in advance, which was fostering skills of self-awareness of one’s emotions.



**Figure 3** The change in “adjusting one’s own emotions” before and after the program

**Figure 4** The change in “evaluating and expressing one’s own emotions” before and after the program

a) The average of 682 7<sup>th</sup> to 8<sup>th</sup> grade students.

The author calculated the score using Toyota and Sakurai (2007) as a reference.

b) The range of scores is presented within the brackets [      ].

c) B1 to B5 represent males, while G1 to G5 represents females

“Adjusting one’s own emotions” signifies controlling one’s emotions and regaining composure through controlling one’s anger and other emotions. It is a scale related to Factor IV: Reflective regulation of emotions to promote emotional and intellectual Growth, of Mayer & Salovey (1997). Factor IV did not have a content that was presumed in advance as the goal of E-pro conducted for this study. Despite this, the reason why a difference in scores was seen in this study is because being able to organize one’s emotions through deepening one’s understanding of one’s emotions, becoming able to verbalize one’s emotions, and understanding the mechanism of how one’s emotions are

formed, indirectly increased the effectiveness toward adjustment of emotions. These results showed that adjustment of emotions was not only effective as a skill training to teach how to control one's emotions, but also to promote self-awareness of emotions as a prerequisite. Furthermore, the results suggested the necessity of an approach such as E-pro.

### ***Self-reflection sheet***

Next, the effects of programs were reviewed from the free writing participants did on the self-reflection sheet. After "Create My Emotion Map", the second session, participants wrote comments such as, "I realized that I didn't have many emotions toward the direction of calmness", "I realized that each person perceives the same word differently", "I realized that being nervous for me also entails a slight excitement", and "I realized that happiness for me isn't about being excited, but being moved". This shows that self-awareness was further deepened through comparing My Emotion Map with others as participants introduced the completed My Emotion Map to one another.

The comments written after "Taking a Journey of Emotion", the third session, included "(Although in the past I wasn't good at thinking about emotions) I realized that I was surprisingly able to think about emotions", "I realized that I am optimistic compared to other participants", "I felt that I was glad that I came here. I felt I found peace inside me." These comments show that engaging in an activity of giving names to the emotions one is feeling using My Emotion Map one made gives a sense of effectiveness to participants who had difficulties in understanding emotions where they can feel that they can understand their own emotions. Furthermore, this shows that there are participants that experience peaceful feelings by having their feelings and emotions organized by giving names to vague emotions.

The comments written after "The Iceberg in the Mind(1)", the fourth session, included, "I realized that although I have deep emotions, I usually express them with light emotions", "I realized that the feeling of 'this bugs me' contained remorse and anger", "I want to convey my emotions even if it is indirectly". These comments show that the sub-goal of E-pro, "⑤ to become able to notice the true emotions behind the emotion that is being felt superficially or is being said" had been mostly achieved. Furthermore, the comments show that there was a participant who noticed his/her true emotions, which led to the motivation of conveying those emotions to people in his/her surroundings and making them understand such emotions. This shows that being able to understand one's own emotions has led to the motivation for interpersonal communication. This result suggests the importance of self-awareness of emotions as a prerequisite for social skill training.

The comments written after "The Iceberg in the Mind(2)", the fifth session, included, "I became able to express my emotions well", "I strove to confront myself", "Although it was difficult, I feel that I came to understand myself", "I felt refreshed, being able to organize my emotions and feeling", and "I felt calm". These comments show that by completing difficult tasks in small steps, an attitude of striving to confront one's own feelings and emotions has started to grow. Furthermore, descriptions such as, 'I felt refreshed and 'I felt calm', suggest that activities that mentally understand the mechanism in which one's emotions are generated and actually organizing such

emotions not only deepens self-awareness of one's emotions, but also leads to emotional self-control.

### ***Future tasks***

In this study, a new psycho-educational program targeting middle school students with the aim of deepening the self-awareness of one's emotions was developed. The result of conducting the developed programs for ten middle school students suggested the following possibilities of the E-pro: a) E-pro has an effect of deepening self-awareness through comparison with others when it is conducted for a group; b) by taking a step-by-step approach to completing tasks, participants can develop a sense of being able to effectively understand their own emotions; c) being able to understand one's emotions leads to controlling one's own emotions; d) understanding one's own emotions leads to motivation toward interpersonal communication; e) the self-understanding skills of emotions that E-pro aims to achieve are significant as prerequisites for SST.

However, since the sample size for this study was small, the interpretation of results needs to be conducted with caution. In future, we would like to examine the effect of E-pro and improve the program by accumulating practical implementation of E-pro using a similar group of five to ten participants. It is also necessary to run the program at grade-level basis and individually, and examine the effects through comparing E-pro practice according to the implementation format of the program. Furthermore, there were participants in this study who saw relatively significant effects and those who did not. The Aptitude Treatment Interaction (ATI) effects between the various aptitudes of the participants and the program also need to be examined by comparing the effects of E-pro in each individual case example. Furthermore, in order to link the skills learned with E-pro to interpersonal settings, we should also examine with which SST program we should co-ordinate E pro.

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## **Hawaii International Conference on Education**

**Title:** A Case for Active Engagement: Balancing teacher and student centeredness in the classroom

**Presenter:** Dr Damian Rentoule, Middle School Principal, Le Jardin Academy Oahu/Chair, Hawaii Association of International Baccalaureate World Schools (HAIBWS), [damian.rentoule@gmail.com](mailto:damian.rentoule@gmail.com)

**Area:** Curriculum, Research and Development

**Presentation type:** Workshop

**Description:** Teachers and students share roles in classroom discourse. A healthy balance of these roles is required if classroom practice is to reflect the promises made in curriculum documents, which increasingly outline pedagogy as well as content. What do these patterns look like, and what can a school do to develop more effective patterns?

### **Workshop Abstract**

Teachers and students share roles in classroom discourse. A healthy balance of these roles is required if classroom practice is to reflect the promises made in curriculum documents, which increasingly outline pedagogy as well as content. What do these patterns look like, and what can a teacher do to develop more effective patterns? These questions are investigated through a series of workshop activities designed to critically evaluate the role of students and teachers in the classroom practice of the participants. The workshop is based on the results of a recent PhD study at the University of Queensland, which examined the nature of student discourse in classrooms. The alignment between the written curriculum and the competing classroom discourse experiences of students was investigated and from the results, a series of teaching strategies that support specific types of discourse roles, both student and teacher centred were identified. The workshop is aimed at helping teachers identify types of discourse that they would like to promote in their own practice and provide concrete strategies to support this pedagogical shift, moving towards greater levels of active engagement in the classroom.

**Focus Research:** Locating Competing Student Discourses in International Baccalaureate Classrooms: A Focus on Active Engagement as a Pedagogical Priority

**Researcher:** Damian Rentoule, The University of Queensland, 2013

### **Abstract**

This study examined the nature of student discourse in classrooms with an International Baccalaureate (IB) Middle Years Programme and Diploma Programme to investigate alignment between the written curriculum and the competing classroom discourse experiences of students. Patterns of classroom discourse were revealed in one case study site and data analysed using critical discourse analysis. The form and the function of classroom discourse were investigated, providing a unique contribution to the field because, typically, the focus is either form or function, but not both. Video recordings of 100 classroom episodes, from Year 6 to Year 12, across a range of subject areas, were collected and observed, and data were analysed to determine the nature of the competing discourses in which students were engaged. The purpose of the study was to determine the extent to which classroom discourse in this school aligned with the written curriculum guidelines of the IB.

The research was designed to investigate the following research questions:

1. What competing student discourses exist in an IB Middle Years Programme and an IB Diploma Programme in one school setting?
2. To what extent does the function of student discourse align with the IB vision and philosophy?
3. What inferences can be drawn about teacher pedagogy and student discourse?

Results were analysed within a taxonomic organisation based on the forms and functions of classroom discourse. Results suggested that a wide range of intricately interconnected and interdependent discourses existed within the classrooms, competing in terms of both form and function. It was also found that student engagement in classroom discourse only partially aligned with IB vision and philosophy, and pedagogical change would be required to create closer alignment. The teacher was found to be the major determinant of the nature of student discourse.

This study contributes to existing knowledge in the field of critical discourse analysis through the identification of the relationship between form and function of discourse and provides educational leaders with a framework for planning pedagogical interventions.

**Keywords:** International Baccalaureate, discourse analysis, pedagogical change, international education

## LESSONS ON ANGLES IN AMERICAN AND KOREAN ELEMENTARY MATHEMATICS CURRICULUM PROGRAMS

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*This study compares lessons on angles in two elementary mathematics curriculum programs: Mathematics (Korea) and Math Trailblazers (U.S.). In both programs, right angles are introduced in grade 3 and the concept of angle is extensively explored in grade 4. These programs include similar key content, such as right, acute, and obtuse angles, and using protractors to measure and draw angles. The two programs, however, exhibit distinct approaches to teaching and learning angle. Mathematics (Korea) uses a static meaning of angle and operates on angles as objects from the beginning, using protractors early on and finding the sum of and differences in angle measures. In contrast, Math Trailblazers (U.S.) emphasizes a dynamic notion of angle and promotes various processes of creating, showing, and estimating angles.*

This study compares lessons on angles in two elementary mathematics curriculum programs: *Mathematics* (Korea) and *Math Trailblazers* (U.S.). In this study, curriculum programs refer to written curriculum materials for day-to-day teaching and learning. *Math Trailblazers* is one of the reform curriculum programs developed with funding by the National Science Foundation in the U. S. *Mathematics* is based on the National Curriculum of Korea, where students have outperformed those in other countries in a number of international studies in mathematics (Mullis, Martin, Gonzalez, & Chrostowski, 2004; Schmidt, Blömeke, & Tatto, 2011).

Geometry is an important mathematics strand in that it provides useful tools to explain our daily lives and it helps students develop reasoning skills. Geometric representations and spatial reasoning help solve problems in other areas of mathematics as well as in real-world situations (National Council of Teachers of Mathematics [NCTM], 2000). Among the various topics in geometry, we focus on the concept of angle in the two programs because it is crucial in learning geometry not only at the elementary level, but also in advanced level of mathematics such as differential geometry. The comparison examines the characteristics used in each program to represent and develop this important concept in a series of lessons. A set of questions guided this comparison: What are similarities and differences in the two programs in terms of key mathematical ideas and their development and organization in the lessons? What characteristics (including strengths and weaknesses) does each program exhibit in those lessons? What can the two different programs learn from each other?

## Theoretical Foundations

Teaching is regarded as a cultural activity (Givvin, 2004). In the same sense, curriculum programs are the products of culture. Cultural insiders are accustomed to their own curriculum, which makes it hard for them to view their curriculum objectively (Geertz, 1984). Comparing curricula from different countries is meaningful not only for finding alternatives, but also for acknowledging potential in one's own curriculum. Specifically, to pursue globalized education in the 21<sup>st</sup> century, we need to uncover local characteristics (Daly, 2007) of curriculum in various countries, such as strong and weak aspects. Such an examination can promote global perspectives on curriculum and ultimately help curriculum developers to envision and design a better curriculum in each country. In this respect, cross-national analyses of curriculum programs should be considered an opportunity to improve one's own curriculum based on the local characteristics identified as well as global perspectives that surface.

Given the significance of international comparisons of curricula, we examined the two curriculum programs with respect to the concept of angle. Researchers argue that the concept of angle is critical to the learning and understanding of geometry (Clements & Burns, 2000; Mitchelmore, 1998). The concept builds the foundation to explore 2- and 3-dimensional shapes from elementary to advanced levels. Angles are defined in two different ways, which may affect students' understanding as well as misconceptions. A static definition of angle is "a part of the plane included between two rays meeting at their endpoints" (Clements & Burns, 2000, p. 31); a dynamic definition is the amount of turn/rotation from one of the rays to the other within the plane. In fact, according to the dual nature (i.e., process and object) of mathematical concepts (Sfard & Linchevski, 1994), students should learn angles as a process (turn/rotation) and reify them as objects (the part between two rays sharing the same endpoint). This means that students need to be able to see angles as processes as well as objects to fully understand the concept of angle. A common misconception students have is that an angle is the distance between the two rays, which comes from experiencing angles in only static ways. In contrast, students who see angles only as processes will have difficulty later when angles operate as objects. To summarize, earlier studies point out that how the concept of angle is represented and developed is crucial to students' learning of angles in particular and perhaps to their future learning of geometry.

## Methods

We analyzed fourth-grade lessons on angles in two curriculum programs in Korea and the U.S. The Korean program, *Mathematics*, based on the national curriculum, is the only one available for elementary students; *Math Trailblazers* is one of various elementary mathematics curriculum programs in the U.S. (see Table 1).

*Mathematics* (grades 1-6), the Korean mathematics curriculum program analyzed, is based on the 2007 National Curriculum, which was developed by the Ministry of Education, Science, and Technology. *Mathematics* aims not only to improve the ability to solve day-by-day problems rationally, but also to recognize mathematical values and promote positive attitudes toward mathematics. In doing so, *Mathematics* emphasizes

understanding basic concepts, principles, and rules; thinking and communicating mathematically; and observing daily phenomena mathematically.

Table 1. Two Curriculum Programs

	Mathematics (Korea)	Math Trailblazers (U.S.)
Edition	2007 revision	3 <sup>rd</sup> Edition
Developer	National team using the 2007 National Curriculum	University project funded by NSF, based on reform movement
Publisher	Ministry of Education, Science, and Technology	Kendall/Hunt Publishing Company
Materials analyzed	Teacher guide, student textbook, student workbook	Teacher guide, student guide, Discovery Assignment Book
Lessons analyzed	8 lessons/sessions in one unit on angles in grade 4	3 lessons (7 sessions) in two geometry units in grade 4

*Math Trailblazers (Trailblazers)* is an elementary (K-5) mathematics curriculum developed by the Teaching Integrated Mathematics and Science Project (TIMS) at the University of Illinois at Chicago, with funding from NSF. *Trailblazers* is aligned with reform recommendations, particularly those known as NCTM Standards, and also integrates mathematics with other disciplines, especially science and language arts. This curriculum introduces advanced mathematics in early grades (e.g., exponents in grade 3) for in-depth inquiry of mathematics, while focusing on computational and problem-solving skills on a daily basis throughout the year.

In both curricula, angles are introduced and explored in-depth in the fourth grade. (In both programs, right angles are introduced in grade 3 in the context of exploring polygons (e.g., triangles), and angles are further explored in polygons in grade 5.) For the analysis, we utilized curriculum materials/resources for both teachers and students that were needed for day-to-day teaching and learning, such as teacher guides and student books. These materials provided the details of the mathematical content and context for each lesson and organizations of the lessons. While the number of lessons in the two programs was different, they had a similar number of sessions, which made the lessons in the two programs comparable. The lessons in *Mathematics* were organized by session, whereas *Trailblazers* had longer lessons that required more than one session.

In the analysis, each lesson was described in terms of the main concepts, representations used, and student activities. The flow of each lesson was examined, and then the sequence and emphases of the entire lessons in each program were studied in terms of the key content and its development through the lessons. Common features and differences in various aspects and approaches to teaching the concept of angle were compared between the two curriculum programs.

## Results

Angles are introduced and extensively explored in the lessons for grade 4 in both curriculum programs. The key content covered in those lessons is nearly the same. Common key content in the angle lessons from the two curriculum programs includes:

- Identifying right, acute, and obtuse angles
- Representing angle measures in degrees
- Using protractors to measure and draw angles
- Identifying components of angles (e.g., a vertex, and two rays or sides)
- Estimating angle measures

Even though the two programs contain similar key content in their angle lessons, they exhibit different approaches to teaching such content and distinct organization of the lessons (see Tables 2 and 3).

Table 2. Angles Represented in the Two Curriculum Programs

	Mathematics (Korea)	Math Trailblazers (U.S.)
Definition of angle	No explicit definition discussed or used in grade 4; “a shape composed of two lines” in grade 3	The amount of turning; the amount of opening
Introducing angle measures (degrees)	One right angle is $90^\circ$ and $1/90$ of one right angle is $1^\circ$ .	One complete turn around a circle (clock face) is $360^\circ$ . Halfway around a circle is $180^\circ$ ; a third of the way around is $120^\circ$ ; a quarter of the way around is $90^\circ$ .
Notations	Angle 가 or Angle 나가다 (using Korean alphabets)	Angle A, $\angle A$ or $\angle BAC$ $\angle A = 90^\circ$
Representations of angles (in order of appearance in the lessons)	Folding fans, clock face, protractors, examples of angles in real life	Clock face (curved arrows representing angles), two rulers or two pencils, angle circles, scissors, examples of angles in the classroom, pattern blocks, and protractors
Contexts representing angles	Folding and opening fans in different degrees, angles in parts of a bicycle frame	A complete turn in ballet, airplanes taking off at different angles, different shapes of sandboxes, angles in pattern blocks, angles in polygons

Table 2 summarizes how the concept of angle is introduced and represented in the lessons in each program. *Mathematics* introduces angles using real-life examples (e.g., two folding fans opened in differing degrees) and asks students to compare sizes of angles intuitively and then by using transparent paper. Such activities lead to the use of a tool (protractor) to measure angles precisely. *Mathematics* uses the static meaning of angles and operates on angles as objects from the beginning, using protractors early on and finding the sum of and difference in angle measures. In contrast, *Trailblazers* introduces angle as the amount of

turning and asks students to do motions to represent angles, such as making a complete turn. In the last lesson, angles are described as the amount of opening as well as the amount of turning. In fact, *Trailblazers* promotes dynamic as well as static meanings of angle, with much emphasis on dynamic interpretation of angle throughout the lessons.

The contexts and representations used in the two programs share some similar forms, such as clock faces and examples of angles in the classroom and real life. *Mathematics* uses physical and concrete representations at the beginning and moves quickly to symbolic notations with diagrams of angles to discuss and precisely measure sizes of angles. *Trailblazers* focuses the notion of turning throughout the representations. In general, *Trailblazers* provides more diverse representations and contexts to illustrate the concept of angle in a dynamic (rather than static) way.

The ways in which each of the two programs introduces angle measures and degrees are distinct. *Mathematics* introduces a right angle as  $90^\circ$  and then defines  $1^\circ$  by using  $1/90$  of one right angle. This curriculum also introduces protractors very early in the lessons. *Trailblazers* defines one complete turn as  $360^\circ$  and then introduces half turn, quarter turn, and a third of a complete turn. *Trailblazers* does not use  $1^\circ$  until the last lesson, in which students start to use protractors to measure angles. In the meantime, *Trailblazers* uses expressions like “a little more than  $90^\circ$ ” and “a little less than  $180^\circ$ ” to show or estimate angles.

Table 3 summarizes the organization of the lessons on angles in the two curriculum programs. Just as they exhibit different approaches to representing angles, their activities and organization of lessons reveal distinct characteristics. The activities in *Mathematics* are organized very carefully from beginning to higher levels and move by small steps toward the advanced level. For example, in the lesson on drawing angles, *Mathematics* has several specified activities to draw angles, ranging from drawing angles intuitively, to drawing angles with one side and the vertex given and with the side given and no vertex, to drawing angles from scratch. In contrast, *Trailblazers* has a somewhat looser organization. Unlike *Mathematics*, *Trailblazers* does not contain all the lessons on angles within one unit. The three lessons on angles are in two separate units, one early in the school year and the other much later. Consequently, the last lesson includes frequent reviews of some concepts taught in the previous lessons to remind students.

*Mathematics* has a typical format in its lessons: facing perturbation, reasoning intuitively, sharing of possible solutions, exploring the main activity with teacher’s guidance, and final checking (closure) and practice. These main steps are listed in the student book as well, which may help students see the flow of their exploration. In contrast, *Trailblazers* does not have a common format throughout the lessons, except that *Trailblazers* has an extensive student exploration segment. One potential reason for this difference in lesson flow is the length of individual lessons. *Mathematics* has lessons organized by sessions (i.e., one lesson is one session), whereas *Trailblazers* has longer lessons with multiple activities or activities requiring more than one session to complete. This means that *Mathematics* has lessons segmented by session, yet they build on the previous ones and

move toward the goals of the entire lessons, i.e., the unit. *Trailblazers'* lessons are less hierarchical, even though they build on previous learning.

Table 3. Organization of Lessons on Angles in the Two Curriculum Programs

	Mathematics (Korea)	Math Trailblazers (U.S.)
Main activities in sequence	<ul style="list-style-type: none"> <li>• Compare the various sizes of angles using transparent paper/sample</li> <li>• Use protractors to measure the sizes of angles</li> <li>• Draw given angles with/without protractors (find various ways to draw angles without a protractor using intuition; draw angles with given base line with/without vertex; draw precise angles without any given)</li> <li>• Estimate the size of angles and then measure the actual size</li> <li>• Find the sum of and difference in angle measures</li> <li>• Find the sum of all the internal angles of a triangle; Cut out the three angles and put them together to see their sum; Find the size of one missing angle or the sum of two missing angles in a triangle</li> <li>• Find the sum of all the internal angles of a quadrilateral; Cut out the four angles and put them together to see their sum; Explore the relationship between the sum of the internal angles of a triangle and the sum of the internal angles of a quadrilateral; Find the size of a missing angle in a quadrilateral</li> <li>• Extension - Explore the sum of the other two angles and external angles of a triangle; Explore the sum of internal angles of other polygons</li> </ul>	<ul style="list-style-type: none"> <li>• Compare pairs of shaded angles pictured on clock faces (which has more turning)</li> <li>• Create angle circles using two same-sized, different-colored circles (green and white); Use them to show and compare different-sized angles</li> <li>• Use angle circles to show angles larger or smaller than the given ones; Draw angles larger or smaller than the given ones and label them</li> <li>• Explore right, acute, and obtuse angles</li> <li>• Estimate angles by using <math>45^\circ</math>, <math>90^\circ</math>, and <math>180^\circ</math> as benchmarks; Use angle circles to make angles in various sizes (e.g., a little less than <math>180^\circ</math>)</li> <li>• Explore angles in pattern blocks (equilateral triangles, trapezoids, hexagons, rhombi, squares) – angle measures of those shapes using the relationships among them</li> <li>• Use protractors to measure angles and practice</li> <li>• Measure three overlapping angles and see that the sum of the two smaller angles are the measure of the larger angle</li> <li>• Construct a sandbox (polygon) with a specific angle (e.g., <math>50^\circ</math>)</li> <li>• Explore internal angles of polygons (quadrilaterals)</li> </ul>
Emphasis	Static approach, angles as objects; Use protractor precisely to measure and draw angles; Think intuitively; Manipulate angles (e.g., cut out angles and place them together); Practice skills	Motion (dynamic approach), angles as processes; The size of an angle is determined by the amount of turning/opening, not by the lengths of the sides.

Precision and approximation are appropriate words to describe overall characteristics of *Mathematics* and *Trailblazers*, respectively. *Mathematics* emphasizes and promotes accuracy and exactness throughout the lessons. Estimating, thinking intuitively and manipulating angles are often required in order to emphasize the necessity of using

protractors. *Trailblazers* uses approximation extensively throughout the lessons. Using benchmarks, such as  $90^\circ$ , to estimate, show and sketch angles is a core activity in the lessons. Also, expressions such as “little more/less than  $90^\circ$ ” are commonly used to describe angles.

### Significance

Understanding mathematics curricula in other countries helps us examine and improve our own practice. It provides new insights and different approaches to looking at phenomena familiar to us, which may not be available otherwise. Comparing the lessons on angles in the two Korean and U.S. elementary mathematics curriculum programs revealed stark differences as well as common features between them. This effort is significant not only to help enhance the quality of the curriculum in each country, but also to promote international perspectives and discussions on curriculum, which can help establish a common ground to investigate issues related to curriculum.

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## Preschool Educational Professionals' Perspectives about Collaboration in an Inclusive Preschool Classroom

### Abstract

Meeting the needs for all preschoolers in inclusive settings is the ultimate goal of effective collaboration. In this study the author explored and reported the preschool educators' perspectives towards the role of successful collaboration to address and meet preschoolers' needs. Eight educators who were related to an inclusive preschool classroom participated in this case study. The author interviewed educators and observed the actual collaborative meetings. The data were analyzed into three major themes: understanding the concept of collaborative practices, practices that were utilized among educators, and the impact of collaboration on an inclusive preschool classroom. The results indicated that all the themes were addressing that establishing effective collaboration among educational professionals is an essential factor in promoting the educational and behavioral outcomes of all preschoolers in inclusive classrooms.

### Research Questions

The research question for this study was: What are the preschool educational professionals' perspectives about collaboration in an inclusive preschool classroom? The question had three sub-questions, which are the following: 1) How do educators understand the concept of collaboration? 2) What models and/or practices do educators utilize in their inclusive preschool classroom? 3) What is the impact of collaboration on the inclusive preschool classroom?

### Participants and Setting

Eight early childhood educators who were associated with an inclusive preschool classroom in a school that is located in the Rocky Mountain Region participated in the study. All collaborative team members who supported the preschool teacher were targeted to be participants.

### Data Collection

Triangulation methods were utilized, which included:

- 1- Observation of the participants' collaboration meetings one time per week for approximately one hour, for three weeks. An observational protocol was utilized to observe where, when, who, why, and how they collaborated and worked together.
- 2- Participants were interviewed using semi-structured interview questions that were developed based on the extant literature review of models and strategies for collaboration.

### Data Analysis

The transcribed interviews that describe participants' perspectives of the collaborative practices and its impact on the inclusive preschool classroom were analyzed by following Merriam's (2009) technique of thematic analysis. Observations of collaborative practices described and utilized support participants' statements.

### **Findings**

Three major themes emerged. The first one was educators' understanding of the concept of collaboration. The participants demonstrated various levels of understanding of the concept of collaboration. The second theme was collaborative practices that the educators implemented for the inclusive preschool classroom. Educators reflected on the effectiveness of these practices. The third theme was the impact of collaborative practices on preschoolers' achievement, which had two sub themes: 1) describing successful collaboration that produced positive outcomes for young children and 2) the challenges of collaboration. Overall, the results indicated that all the themes were addressing that establishing effective collaboration among educational professionals is an essential factor in promoting the educational and behavioral outcomes of all preschoolers in inclusive classrooms.

**1. Title of the submission:** Innovations in Teacher Education: Preparing Teachers of Deaf/Hard of Hearing Students

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**6. Abstract:**

Approximately 10% of the Canadian population has some degree of hearing loss. This means that many students in our schools have a hearing loss that impacts their learning. Educational programming for these students is greatly enhanced when a Teacher of the Deaf/Hard of Hearing (DHH) is on the educational team. Currently, there is a significant shortage of teachers of the DHH in Manitoba and across Canada. These teachers work with students of all ages and in a variety of different work capacities including, resource/special education, regular classrooms, itinerant/consultant, or special schools/programs for DHH students.

This presentation discusses a newly developed program designed for current teachers who are interested in taking the Deaf/Hard of Hearing. The program is structured within a University of Manitoba Post Baccalaureate Diploma in Education (PBDE) hour (10 three credit hour courses) professional development program for teachers. Students are also required to complete 400 hours of practicum over a 10-week period as part of the program, which is divided over two years to ensure that students receive experiences in a variety of educational settings. The courses include flexible course delivery options (evening, weekends, online, etc.) so that teachers who are working full time and live throughout Manitoba can participate. This includes employing a combination of face-to-face and distance modes of instruction. Students move through the series of courses as a part-time cohort group and, upon admission, are expected to make a commitment to complete the entire program within the two-year timeframe.

The first group of teachers were admitted into the program in May 2012, and began taking their first courses in July 2012. The group included a total of 18 teachers, of whom eleven did not reside in Winnipeg (Winnipeg is the major urban centre in Manitoba and the location of the University of Manitoba). For this reason, it was decided to offer face-to-face courses during the summer months, and blended courses (primarily online with one face-to-face session on a Saturday) during the regular Fall and Winter terms. The decisions regarding which courses to offer in a

blended format were challenging, as practical coursework is typically best offered within interactive settings. Specifically, in the area of Deaf Education, there are numerous technological devices and assessment practices that require hands-on learning. The following table outlines the courses that were part of the Teacher of the Deaf/HH PBDE Program and how and when they were offered.

### **Proposed Course Schedule:**

#### **Year 1**

##### **Summer (July) 2012**

1. Language, Learning & Literacy (6 credit hours) – face-to-face classes in an intense two-week format

##### **Fall 2012**

2. Communication Approaches in Educational Settings (3 credit hours) – online and one Saturday face-to-face class

##### **Winter 2013**

3. Educational Audiology 1 (3) – online and one Saturday face-to-face class

##### **Winter/Summer (January – August) 2013**

Practicum (5 weeks)

#### **Year 2**

##### **Summer (July) 2013**

4. Deaf Studies (3) – face-to-face classes in an intense one-week format
5. Educational Audiology 2 (3) – face-to-face classes in an intense one-week format

##### **Fall 2013/Winter 2014**

6. Curriculum Development for Deaf/Hard of Hearing Learners (6) – online and one Saturday face-to-face class each term

##### **Summer (July) 2014**

7. Speaking and Listening with Deaf/Hard of Hearing Learners (3) – face-to-face classes in an intense one-week format
8. Literacy Development with Deaf/Hard of Hearing Learners (3) – face-to-face classes in an intense one-week format

##### **Winter/Summer (January – August) 2013**

Practicum (5 weeks)

#### **Practicum (10 weeks or 400 hours):**

The practicum was administered by the University of Manitoba in partnership with the professional organization of CAEDHH-MB (Canadian Association of Educators of the Deaf/Hard of Hearing – Manitoba chapter). The goal was to place students in a variety of educational settings for a minimum of 4 weeks in each setting to complete a total of 10 weeks of direct experience working with children under the

supervision of a CAEDHH certified teacher of the DHH. The current programming for DHH students in Manitoba is to include them in their home schools and within regular classes. For this reason, it was challenging to find suitable practicum placements for our teacher of the DHH candidates. Most teachers of DHH students work as itinerant teachers, supporting a variety of students in regular classrooms in different schools. We did arrange for placements with itinerant teachers of the DHH, as well as placements in cluster programs and the specialized school for DHH students. We also developed Spring Break and Summer Educational Camps for DHH students to provide opportunities for our teacher of the DHH candidates to work with groups of DHH children in classroom settings. All students were required to keep an accurate log of their hours and activities, and supervisors were required to complete evaluation reports.

The first group of teachers is currently beginning the second year of the program and this presentation outlined the insights and challenges encountered through program implementation to this point. In particular, a further discussion of the criteria and strategies for decisions regarding online course delivery and practicum placements was included.

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Submission ID: 1405

Submission Title: Topic two: 'Using a *Range* of Strategies to Teach a *Range* of Students, **Practical** Tools, **Visible** Results'

Topic Area: Secondary Education

Presentation Format: Workshop

Overview: This workshop allows attendants to see different methodologies used in the classroom at various ages, for a mixture of student types. Teachers and Parents can adapt tasks/activities to suit their own subject/school, to make teaching and learning more fun, improving engagement and most importantly achieving results!

## HAWAII INTERNATIONAL CONFERENCE ON EDUCATION

12<sup>th</sup> Annual Conference

January 5-8, 2014

1. **Title:** *The Art of Mass Media in Ancient Times: the Greeks and the Romans.*
2. **Name of the author:** Joaquín Montero, Ph.D.
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6. **Topic area:** Cross-disciplinary areas of Arts and Humanities/History

**Presentation format:** Paper Session

**Description:** This paper shows a newly, unique and updated approach to the history and theory of mass communications: it sustains for the first time the thesis that ancient numismatics are the first and earliest medium of mass media communication in history. Provides a great number of examples from the ancient Greek and Roman worlds. This interdisciplinary topic covers areas from history, politics, art and communications.

### 6. 1. Abstract:

#### *Introduction*

This presentation is based on a finished and completed research paper ready to be published. This work shows a new and unique approach to the history and theory of mass communications, with an introduction to the definition of mass communication in history, when and how it appears for the first time. It debates the importance of numismatics in history as vehicles to carry messages widely, and gives strong evidence that, for the first time, ancient currency is the first and earliest medium of mass media communication in history. The coin will start to be a mass medium from the very beginning since it was produced in mass quantities, and circulated continually throughout and beyond some ancient empires.

The new theory will be proved and illustrated with the accurate evidence provided by images of ancient coins classified by time periods and themes related to the specific communication purposes: from some Greek city-states, where the coin was a global tool to unify politically different economic areas, to the Hellenistic rulers and the Roman Empire, when the power of image and political propaganda were used in an extensive and intensive manner.

## ***Methodology***

The presentation contains two parts:

1. A brief introduction to the theory of mass media communication in history to explain and support this thesis.

2. The numismatic evidence and the practical examples that illustrate the different methods and topics of mass communication through coins in the ancient times, with an extensive part dedicated to the Romans, truly masters of propaganda in their coinage.

The methodology that will be used on this part is based on the division of the themes. The contents of the presentation are divided in the following parts:

2.1. Precedents. History of coinage. Coins of the first empires: local use vs. global circulation.

2.2. First global use of coinage: Alexander the Great and the Hellenistic rulers.

2.3. The Romans, masters of communication through money. The coin as a tool to carry a message. Portraits and the power of image. A great variety of reverses for each emperor's *headlines*.

Images classified by topics:

- Religious types and rulers as gods.
- Military achievements: victories and trophies.
- The reverses of Trajan and Hadrian.
- Other propaganda issues.

## ***Sources***

The research and literary sources are very numerous and they would take so much space in the abstract to be mentioned, so we will provide just a few basic references here, but an extensive bibliography will be included in the paper of the presentation.

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## **6. 2: Full paper:**

### **The Art of Mass Media in Ancient Times: the Greeks and the Romans**

*Joaquín Montero, Ph. D.*

In our contemporary society, media and communications are readily visible and affect our lives on a daily basis. Due to the evolution of technology, the amount of information we process every day is astounding and sometimes overwhelming. Although not all this information we receive is propaganda, we see how publicity and commercials, -brothers and sisters of the propaganda family-, attempt to influence people all over the world.

Today, the transmission of ideas, images or messages is fairly easy with the boom of technology in communications. Information is available to anyone anywhere at any moment, and in real time. We have the Internet to get extraordinary amounts of data of any kind and e-mails to be in touch with other people. Not to mention *Facebook*, *Twitter* and other networks, as well as *iPads* and *iPhones* or other devices to connect with any person, see their faces while we chat, or sending notes wherever we are by text messages. The impact of communications today is so great that even those actions are becoming new words of our vocabulary in English and other languages. The last couple of decades have seen the explosion of social connections, even if this does not mean that people are closer than ever to each other, at least they have more options to keep in touch or to have the feeling of staying connected. Nobody dares to walk out of his or her home every morning without a cell phone, and if we forget it, we may have a feeling of anxiety or insecurity, like walking naked down the street. The technological availability of communication in the present day makes possible and more present the influence of media and mass communications.

In ancient societies, where the transmission of ideas or messages was limited by the level of technology and the equation of time and space, they discovered and started to use the first mass media tool in all history: the coin. Coinage easily meets the criteria utilized to define mass media. Coins were reproducible in mass quantities; light enough to be easily transported through space; and also destined to an anonymous mass audience (unlike, for example a letter, that is specifically addressed to a particular person). So, it is not difficult to see how this medium of communication was the first one transmitting messages from the power. This power (kings, emperors, or other types of rulers) controlled the production of the coinage and thus decided on the message the carried<sup>[1]</sup>. It is obvious then that ancient coinage was the birth of political propaganda on a massive scale.

### **“Global” Circulation**

The concept of “global” or “globalization” that we can apply for the Ancient World is different from the contemporary term. Considering the geographical limitations of the Ancients and the knowledge of their own world compared to ours, “global” in those days can be referred to a certain extension of territory with some common characteristics overall (like sharing an official language, living under one ruler or power, and the use of the same coinage); but, at the same time, those territories could have their own artistic and cultural expressions, languages, coinages, or even governments, but only used locally.

The extensive production or mint of coins, and the global circulation of a coinage is different from an extended circulation or acceptance of a coin. For example, during the Golden Age of Athens (V Century B.C.), the popular Athenian tetradrachms with Athena and the owl was used in trade from mainland Greece to Egypt, as well as accepted and

imitated by many other cultures, but the importance of this coinage was limited if we compare it to latter and more global examples. There is no doubt that the acceptance of a coin further from its original territory shows evidence of economic strength, but it still far from the stronger expression of power of being the official coinage of different lands and civilizations, united by the power of a common coinage.

The first example of global circulation and production of a coinage, in the extensive meaning of what we understand by “global”; also made under one common ruler, and with a wide expansion not only geographical, but also in the length of time, is the coinage of Alexander the Great. With the Macedonian king -later Egyptian pharaoh and Persian emperor-, the opening of new trading routes from Greece and Europe to Asia Minor, the Middle East, North of Africa, and all the way to India, the call for an extensive use of coins was a real need. A common coinage will be the most decisive step into a political unification of the many countries full of diversity that he conquered. At the same time, after Alexander’s lifetime, coins will also became a political instrument for regulating the economy, controlling territories, and carrying a message from the power in charge. And since then, coins will be the most important tool of political propaganda in global empires, where their circulation and reach was global too. The next global empire found in history after Alexander’s is the Roman Empire, which will last longer –almost exactly 500 years-, and will expand for three continents, and minting millions and millions of different coins.

### **The First Steps: Propaganda on Greek Coinage**

Not all Greek coinage illustrates propaganda issues mainly for religious reasons. Propaganda typically took the form of endorsing current leadership and in later times, included portraits of rulers. Initially, however, no human being could be represented on a metal. The reason why portraits of human beings did not appear on coins may have been due in part to some religious taboo, which made the coins rightful property of the gods, as was everything else that came from nature. It was considered sacrilegious to represent humans on coins. This portraiture was viewed like an elevation of humans to the level of the gods. Therefore, the first portraits on coins were gods, goddesses, heroes and mythological creatures. As the religious viewpoint evolved, portraits began appearing on coins at the time of Alexander the Great and his successors, the pioneers in the use of image as propaganda coming from power, and the first examples of a deified ruler.

For a man, king or ruler, to be represented in the metal of a coin, he must be first recognized as a god. The first king that we have on the history of numismatics is Alexander the Great, not only on his posthumous portraits minted in the different coinage by his successors, but also during his lifetime. According to Martin Price “only certain portraits of Alexander on lifetime coins are those of the bronze issue of Memphis (3960) and the figure on the five-shekel (dekadrachm).”<sup>1</sup> *See Fig. 1*

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<sup>1</sup> GOLDSBOROUGH, Reid. *The Celator*. Vol. 16, No. 9, September 2002. p. 4, 37-38.



Fig. 1. Reverse of the Porus dekadrachm, showing the image of Alexander holding a thunderbolt, symbol of Zeus, on his right hand. This would be the only image of Alexander to survive from his lifetime.

This remarkable piece is known as the dekadrachm of Poros and was minted after Alexander's victorious campaign in India, probably in the imperial mint of Babylon. Even if the most important question of who issued these coins remains, there is general agreement<sup>2</sup> that the warrior represented on both, obverse and reverse, can be none other than Alexander. The action on the obverse depicts a horseman on a prancing horse attacking two riders on an elephant retreating to the right. He wears a plumed Phrygian helmet, cuirass, and *chlamys*, and with his right hand he thrusts a long spear toward the elephant. The reverse shows Alexander standing to the left, being crowned by a small Nike flying toward him from the left. He wears a plumed, crested Phrygian helmet and a cuirass with a belt and fringes. A scabbard hangs from a strap over his right shoulder, and *chlamys* floats on his back. In his right hand he holds a thunderbolt horizontally, and he rests his left on a long spear. The most astonishing feature of this scene is the

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<sup>2</sup> ARNOLD-BIUCCHI, Carmen. *Alexander's Coins and Alexander's Image*. Harvard University, 2006. p. 74-75.

thunderbolt<sup>2</sup>, the divine attribute of Zeus, in the right hand of Alexander. The importance of this coin is that “never before in the Greek world, and certainly never on a coin, had a mortal been portrayed with divine attributes.” After Alexander’s visit to the oasis of Siwa in Egypt in 331 B.C., Alexander was recognized as a son of Zeus by the priests and, as a pharaoh. He may use this relationship with the divine as propaganda between his eastern subjects, who would not understand a king or a ruler not divine or deified. Since then, Alexander was a living god for the Eastern cultures, and also, since then, his portrait could be represented in coins, as he is not a mortal anymore. According to Otto Morkholm<sup>3</sup>, “if Alexander were responsible, however, the reverse type of the decadrachms would be a document of crucial importance for the discussion of Alexander’s claim to deification, a claim for which we have written evidence from the last years of Alexander’s reign.”

### **Hellenistic portraits as propaganda**

After the death of Alexander the Great, some of his generals kept minting the same imperial coinage under his name in order to keep a fictitious unity of Alexander’s empire, but others started minting their own coinage using the image of the Macedonian king as reference for propaganda purposes. This is the case of Lysimachos in Thrace and Ptolemy in Egypt.

Alexander portrait coinage was so extensive in the Lysimachos’ tetradrachms that the face of Alexander has endured through time. We can say that Lysimachos’ propaganda was too successful, and his aim was to associate his own name with the legend and aura of Alexander, and this association can never be wiped away<sup>4</sup>. But as Mark Rakicic wonders in his article about propaganda in the coins of Lysimachos, we can ask ourselves the same questions: “Did the horned head of Alexander, with all its divine glory, really reflect Lysimachos’ respect and veneration towards his late master, or are we to view it as a particularly clever piece of propaganda solely designed to add security and legitimacy to his reign?” Maybe for the ancients this coinage showed a mark of respect towards a man who had changed their world, whether or not Lysimachos have established more credibility or gained some favor through his coinage. *Fig. 2.*

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<sup>3</sup> MORKHOLM, Otto. *Early Hellenistic Coinage*. Cambridge University Press, 1991. p. 53-54.

<sup>4</sup> RAKICIC, Mark. *Ancient Literary Sources Offer Glimpses into the Character of Lysimachos*. *The Celator*. Vol. 6, No. 4. April 1992. p. 10.



Fig. 2. Lysimachos' tetradrachm with the deified portrait of Alexander the Great wearing the horns of Zeus-Ammon. *Authors' collection.*

Ptolemy, while he was satrap of Egypt, minted tetradrachms with the portrait of Alexander as well. He soon introduced a new and significant obverse type on his silver tetradrachms: the head of the deified Alexander wearing an elephant's scalp with trunk and tusks. Beneath the elephant headdress the ram's horn of Zeus Ammon (the same one represented in the Lysimachos' coins) is visible, and the royal diadem appears above the forehead. The king also wears the *aegis* of Zeus tied around the neck by two snakes. This coin is full of symbolism relating Alexander to his divinity. Indeed the relationship between the conqueror of the world and his close friend and general, Ptolemy, to legitimize his own power and rule in Egypt.



Fig. 3. Ptolemy's I tetradrachm. Diademed head of deified Alexander the Great, wearing an elephant skin headdress as conqueror of India, with the horns of Zeus-Ammon underneath and the aegis over his shoulders tied with two snakes.

Demetrius Poliorcetes started using the Alexander-type coinage, replacing later the name of Alexander for his own one and adding soon a royal title to it. After 300 B.C., Demetrius made a significant change in his coinage. The new silver tetradrachms now showed on the obverse a winged figure of Nike carrying a trumpet in one hand and a signal mast in the other, alighting on the forecastle of a defeated galley, the prow ornament (*stolos*) of which has been broken off. This type has the intention to remind the world of his great sea victory of 306. "Cases of conscious propaganda in Greek coin types are rare, but this, together with the Porus issues of Alexander, presents perhaps the most obvious example<sup>5</sup>."

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<sup>5</sup> MORKHOLM, Otto. *Early Hellenistic Coinage*. Cambridge University Press, 1991. p. 78.



Fig. 4. Obverse of a Demetrius Poliorcetes' tetradrachm. Nike standing left, holding trumpet on prow left.

In the new types of tetradrachms that Demetrius Poliorcetes will introduce later, the reverse shows the same striding Poseidon with trident, while the obverse gives place to the earliest portrait of a Hellenistic king with the royal diadem and bull's horns. The bull is the sacred animal of his patron deity Poseidon. These are excellent examples of Hellenistic portraiture, showing a lifelike representation of marked individuality. The bull's horns indicate that Demetrius claimed divine honors for himself, this one being the first certain numismatic example of deification of a living ruler<sup>6</sup>.

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<sup>6</sup> MORKHOLM, Otto. *Early Hellenistic Coinage*. Cambridge University Press, 1991. p. 79.



Fig. 5. Tetradrachm of Demetrius Poliorcetes. Diademed head of Demetrius right, with bull's horn on obverse. Poseidon standing left, right foot on rock, resting right arm on thigh and holding trident with left hand on reverse. *Author's collection.*

### **Roman Imperial Coinage: the many faces of propaganda and messages on the reverse types.**

Even if the Greeks started using the portraits of the rulers as image of power and political propaganda, “this was especially sophisticated in the Roman period, when ruling elite chose to impress a message on their intended audience through a web of literature, monumental architecture, mosaics, wall paintings, sculpture, and other media. The cheapest, quickest, and most widespread way of disseminating a message to the mass population of the Empire was through coinage, which could represent the portrait of a new political leader or emperor, commemorate the conquest of a new territory, or legitimize the accession of a chosen heir, and so on. This was born in the power politics of the late Republican period, but was seemingly killed off as a concept in Late Antiquity<sup>7</sup>.”

The Romans were the authentic masters of numismatic propaganda, but even if we can find some very valid examples of propaganda in the Roman Republican coinage, the adoption of the coin as a real and extensive tool of propaganda in history began in a massive way with the Roman emperors. In a time when there were not other mass means of communication, like today's newspapers, magazines, television and Internet, the coins became the mass media instruments delivering to everyone several different messages. From the governor of the province to each peasant, coinage reached everyone's hands<sup>8</sup>.

<sup>7</sup> MERRONY, Mark. *Propaganda On Roman & Early Byzantine Coins*. Minerva. Vol. 18. No. 2. March/April 2007. p. 54.

<sup>8</sup> David R. Sear agrees with this theory on his article *The Reverse Types of the Imperial Coinage*: “There can be little doubt that the emperors of Rome were fully aware of the value of the Imperial coinage as a tool of propaganda, it being one of the most effective means of mass communication available to them. (...) The

For the various types of themes in the propaganda or messages that are found in the Roman Imperial coinage, we just have to observe the reverses of the coins, and even if a large proportion of those reverses are not to be included under the term “propaganda”, the majority of the reverses could be included in particular groups according with specific topics of communication. There are so many examples of propaganda types that it is not possible to include them or to do justice to the topic in an article of this length. This is just a little taste of some examples to introduce and illustrate the concept and theory of the ancient coinage as vehicle of mass media communications.

According to David L. Vagi<sup>9</sup>: “The reverse of the Roman coins is undoubtedly the most variable, because it was arranged in so many different ways. Like the obverse, it typically consists of a design surrounded by an inscription in the periphery (...). In a most practical sense, all Roman coins were vehicles of propaganda. The obverse reminded the people on a daily basis who was in command, whereas the reverse would deliver a wide array of messages that promoted the interests of the government and the ruler.”

The topics on the reverses can be classified attending to their representations in many different groups<sup>10</sup> as:

1. *Personification of concepts*, (such as patience, prudence, friendship, justice, virtue, good fortune, etc.), *deities and gods*.
2. *Geographical types*. This extensive group includes the personification of provinces, cities and rivers. This topic and the next one share a deep connection, since some provinces visited by some emperors were represented personified.
3. *Travels of the emperor*: including places regions visited (this group would also include the sub-category of geographical types above of personification of provinces and cities. This could be particularly applied to the journeys of Hadrian), means of transportation (generally ships), the emperor saluting cities and provinces or helping them to rise<sup>11</sup>. The popular reverses with nautical types representing ships could be included here when they are related to the trips of the emperor.
4. *Restitution or reparation types*. They commonly show the emperor offering a hand to raise the personification of a province or a region who appears kneeling in front of him.
5. *The emperor and his family* or dynasty.
6. *Empresses*. Types struck for women with deities and personifications associated with womanly duties.

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government of the day was thus able to present itself and its achievements in surprising detail to almost all of the inhabitants of the vast Empire.” “*Roman Coins and Their Values*”. The Millennium Edition, Volume I, Spink, London 2000. p. 56.

<sup>9</sup> VAGI, David L.: *Introduction to the Reverse in Coinage and History of the Roman Empire. Volume Two: Coinage*. Coin World. Sidney, Ohio. 1999. p. 53.

<sup>10</sup> This classification has been made combining the criteria of David R. Sear and David L. Vagi. with some additions.

<sup>11</sup> This particular and propagandistic topic needs its own category because if sometimes it is related to military campaigns, there are several examples when the restoration or reparation of some provinces or territories are the consequence of a civil reform or the process of a project.

7. *Consecration types*. They show deified relatives or predecessors of the current emperor.
8. *Divine associations*. They represent the imperial godliness. Many emperors related themselves with certain deities, adopting symbols, objects or animals associated to supernatural beings, like Commodus wearing the lion head and skin as Roman Hercules or representing himself as Janus.
9. *Commemorations, anniversaries and festivals*. This is a very wide classification, including the interesting group of buildings and other constructions. It also includes the iconography of foundation of new cities.
10. *Military accomplishments*. Reverses with victories, trophies and conquests of new regions are very extended, common and one of the most important uses of propaganda in the Roman coinage. The legionary types would be included under this category, but with their own military identity.
11. *Inscriptions*. Reverses with no figures and mainly just lettering.
12. *Heavenly bodies*. Representations of stars, crescent moons and comets.
13. *Mythological types*. They include popular legends and myths.
14. *Symbolic types and objects*. They usually have some religious association (sacrificial tools, tripods, emblems, etc.) with some exceptions, like tables with prices on them in some Roman provincial coins.
15. *Animals and other creatures*. Most of them representing symbols of regions, emperors, concepts or deities.
16. *Architecture*. Related to the category of commemorations since most of the structures shown were represented on coinage to commemorate its construction. This classification includes a wide variety: buildings such as amphitheaters (like the Colosseum), temples, statues, altars, columns, triumphal arches, forums, military camps gates and towers, bridges, ports, roads, etc.
17. *Fiscal and financial*. Coins related to money, taxes and financial issues. Important for the historians as well as the numismatists.
18. *Restorations and posthumous*. Series of earlier types issued by some emperors for an anniversary or with a commemorative purpose.

Some of the categories above are not related to any aspects of propaganda, but many others are in one way or another, as we can see in the illustrations below. These are just some examples to illustrate the relationship between coinage and propaganda, or numismatics and mass media communications in ancient Rome<sup>12</sup>.

### 1. Personification of concepts, deities and gods.

Some of the female personifications on the reverse types were allegories of the virtues and qualities of the rulers depicted on the obverse of the coin, so the common people could associate those values to the current emperor or his reign. This is one of the most interesting and extensive themes in the Roman Imperial coinage, carrying small pieces of personal propaganda. *Clementia* personifies clemency and mercy; *Concordia*

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<sup>12</sup> The photographs and some of the comments have been found in the catalogs of these main numismatic sellers: Mail Bid Sales and Triton, from Classical Numismatic Group –CNG Coins-; Gemini Auctions, from Harlan J. Berk and Freeman & Sear; and Stack’s Coins auctions.

and Patientia are concord and harmony, patience and endurance; Constantia symbolizes courage and perseverance; Felicitas is happiness associated with prosperity and success, that is why one of the symbols she holds is the cornucopia; Fides is good faith and loyalty; Fortuna good fortune and prosperity; Hilaritas and Laetitia personify rejoicing, gladness and happiness; Indulgentia is gentleness; Justitia and Aequitas are justice; Liberalitas is liberality; Libertas is liberty or the restoration of freedom; Virtus personifies valor, courage and bravery; etc.



Fig. 6. Trajan (98-117 AD). Denarius. 115-116 AD. Felicitas standing left, holding short caduceus and cornucopia. *Author's collection.*



Fig. 7. Trajan. Denarius. 115-116 AD. Virtus standing right, left foot on helmet, holding spear and parazonium. *Author's collection.*



Fig. 8. Hadrian (117-138 AD). Denarius. 128-129 AD. Aequitas standing left, holding scales and cornucopia. *Author's collection.*



Fig. 9. Trajan. Denarius. 116 AD. Radiate, draped bust of Sol right. Sol, the sun god, represents the East, where Trajan was campaigning at the time of this issue. This portrait

of Sol has the attributes of other portraits of Alexander the Great as Helios or Sol. Alexander was the conqueror of the East, and it is possible that the Roman emperors wanted to associate themselves with Alexander's conquests and became another Alexander by minting this suggestive Alexandrine portrait on the reverses. *Author's collection.*

## 2. Geographical types

Some of the types included here under geographical types could also be included in the category of travels. One of the most important series was produced by Hadrian to illustrate all his trips around the Roman Empire.



Fig. 10. Trajan. Denarius. Danube reclining left, head right, cloak billowing over head, right hand on ship's prow.



Fig. 11. Hadrian. Denarius. 132 AD. Nilus reclining right, holding reed and cornucopia, hippopotamus before him, crocodile in waves below. This type commemorates Hadrian's visit to Egypt in 130 AD, during which his young companion Antinous drowned in the river Nile.



Fig. 12. Trajan. Denarius. 112 AD. Arabia standing right, head left, holding branch and pointed bundle of rods, camel at her feet. Commemorates the annexation of this province. *Author's collection.*



Fig. 13. Hadrian. Denarius. 132 AD. Egypt reclining left, holding sistrum and resting elbow on basket of grain, ibis at her feet. *Author's collection.*



Fig. 14. Hadrian. Denarius. 132 AD. Africa reclining left, wearing elephant skin headdress and holding scorpion and cornucopia, basket of fruits at her feet. *Author's collection.*



Fig. 15. Hadrian. Denarius. 132 AD. Alexandria standing left, holding sistrum and snake in basket. *Author's collection.*



Fig. 16. Hadrian. Denarius. 132 AD. Asia standing left, setting foot on prow and holding hook and rudder. *Author's collection.*



Fig. 17. Hadrian. Denarius. Hispania reclining left, holding branch, rabbit at her feet.  
*Author's collection.*



Fig. 18. Hadrian. Denarius. 132 AD. Italia standing left, holding scepter and cornucopia.

### 3. Travels of the emperor

Hadrian series are the most popular ones on this category.



Fig. 19. Hadrian. Denarius. 131 AD. Galley left with Hadrian under roof at stern, four rowers, and small sail on slanted mast at prow.



Fig. 20. Hadrian. Denarius. 132 AD. Roma wearing Amazonian garb and holding spear, clasps hands with Hadrian, who is togate and holds roll. This reverse celebrates Hadrian's return to Rome on 131 AD, after his second great tour of the empire.

#### 4. Restitution or reparation types

The ruler or emperor shows himself as a savior or someone bringing good to the different provinces of the empire. These types have a high content of propaganda.



Fig. 21. Hadrian. Denarius. 132 AD. Hadrian on right, standing left, raising kneeling Africa, who wears elephant skin headdress and holds wheat ears, two wheat stalks between them.



Fig. 22. Hadrian. Denarius. 132 AD. Hadrian on left, standing right, raising kneeling Gallia; Hadrian's right foot is forward and his body is seen from the back. *Author's col.*



Fig. 23. Hadrian. Denarius. 132 AD. Hadrian on right, standing left, raising kneeling Hispania, rabbit at Hispania's feet. *Author's collection.*



Fig. 24. Hadrian (117-138 AD). Sestertius. Struck 120-122 AD. Laureate bust of Hadrian left, on obverse. Reverse: Emperor standing left, raising kneeling Orbis Terrarum (Empire) who holds globe. *Author's collection.*

5. The emperor and his family



Fig. 25. Hadrian (117-138 AD). Dupondius. 117 AD. Radiated portrait of Hadrian on obverse. Trajan standing left and Hadrian standing right, looking at each other and holding the globe between them, on reverse.



Fig. 26. Hadrian. Denarius. 117 AD. Hadrian and Trajan, both laureate and togate, supporting a globe between them and holding rolls. This is one of the earliest issues of

Hadrian at Rome, giving him the victory and honorary titles of Trajan. This reverse type implies that his adoption by Trajan and succession was legitimate, not fabricated after Trajan's death, as some people speculated.

#### 6. Divine associations

The emperors used the coins to show their divine ascendance to the common people in regular basis. In some other cases, they will portrait themselves and high priests, offering sacrifices to the Gods and identifying their personas with mythological heroes, gods or cults.



Fig. 27. Elagabalus. Denarius. 218-222 AD. Portrait of the emperor on the obverse. Eagle standing on thunderbolt before the stone –probably a meteorite– of Emesa, holding wreath in beak, five stars above.



Fig. 28. Elagabalus. Aureus. Struck 220-221 AD. Laureate and cuirassed bust right of emperor on obverse. On reverse: slow quadriga left drawing the Stone of Emesa surmounted by an eagle, star above. This coin and the previous one commemorate the inheriting of the office of high priest of the sun-god by Elagabalus at Emesa, Syria, when he was fourteen. The cult was represented by a sacred stone, and in 219 AD, when he moved from Emesa to Rome, he took the stone with him. This event is what the coin has recorded.

#### 7. Commemorations, anniversaries and festivals



Fig. 29. Trajan. Sestertius. 115 AD. Jupiter, nude except for cloak hanging behind his shoulders, standing left, holding out thunderbolt and the edge of his cloak in right hand over small figure of Trajan, and holding scepter in left hand; Trajan is togate, standing left and holds branch and short scepter. The legend of this reverse is a dedication to Jupiter as “the preserver of the Father of his Country”. The coin commemorates Trajan’s miraculous escape from an earthquake at Antioch in 115 and thanks the god for his divine intervention.



Fig. 30. Titus (79-81 AD). Sestertius. Struck 80/1 AD. The Flavian Amphitheater (The Colosseum), on obverse. Titus seated left on curule chair, holding branch; a pile of arms around him. This coin commemorates the completion of the Colosseum by Titus in 80 AD. Its construction began in 71 AD, under Vespasian, but finished by Titus and recorded as that in metal.



Fig. 31. Gaius (Caligula). 37-41AD. As. Minted in Caesaraugusta, Spain. Laureate head of emperor left on obverse. Reverse: pontiff veiled in toga driving yoke of oxen right, plowing pomerium.

## 8. Military accomplishments

These types were very popular and extensive. Scenes of the emperor in military actions and combat, addressing the troops, or setting up a trophy, were important and powerful images for propaganda. We also find many types of victories and trophies to indicate successful military campaigns.



Fig. 32. Vespasian (69-79 AD). Sestertertius. Struck 72 AD. Laureate head of Vespasian right on obverse. Reverse: Titus on horseback right, spearing enemy. In 71, Titus received the title of imperator and was elevated to the rank of co-ruler with Vespasian. The reverse celebrates Titus' victories in the Jewish War.



Fig. 33. Trajan. Denarius. 112 AD. Victory standing right, left foot on helmet, inscribing DA / CI / CA on shield set on palm tree. This issue celebrates Trajan's victories in Dacia.



Fig. 34. Trajan. Sestertius 116-117 AD. Trajan standing left, head right, holding spear and parazonium; at his feet Armenia seated left wearing tiara, flanked by the river gods Tigris and Euphrates, each holding reed and reclining on urn from which water flows. This coin commemorates Trajan's capture of Armenia and Mesopotamia, the moment of

the Roman Empire's greatest territorial expansion. It also bears one of the longest legends (like text messages in today's cell phones, but permanent) ever placed on an ancient coin with 54 letters on the obverse and 44 on the reverse.



Fig. 35. Trajan. Sestertius. Struck 115-116 AD. Laureate and draped bust right, on obverse. Trajan seated right on platform, accompanied by two officers, addressing soldiers.



Fig. 36. Trajan. Denarius. Reverse: Victory, right, crowning emperor, left, in military dress with cuirass and spear on his right hand.



Fig. 37. Trajan. Denarius. 107-111 AD. Trophy of Dacian arms, round shield and two crossed oblong shields above, two further shields, two spears, and two curved swords at base. *Author's collection.*



Fig. 38. Hadrian. Denarius. 131-138 AD. Victory-Nemesis advancing right, drawing out fold of dress from breast and holding branch. *Author's collection.*



Fig. 39. Hadrian. Denarius. 128-129 AD. Victory naked to waist, standing right, raising hand to head and holding palm with left.



Fig. 40. Marcus Aurelius (161-180 AD). Medallion. Emperor holding spear crowing trophy while Victory places shield on the left. Two German captives, man and woman, at base. Commemorates his victories in Germania.



Fig. 41. Lucius Verus (161-169 AD). Sestertius. Laureate bust of emperor right. Reverse: Victory holding trophy with Armenia seated right at her feet.

#### 9. Heavenly bodies



Fig. 42. Augustus (27 BC-14 AD). Denarius. Struck 17 BC. Head left wearing oak wreath on obverse. Comet with eight rays and tail with the inscription: DIVVS IVLIVS on reverse. A comet that appeared in summer 44 BC was held to signal Julius Caesar's ascension to the heavens. The memory of Caesar's deification was revived in Augustus' Saecular Games of 17 BC. This coin commemorates this event and the divinity of Julius Caesar, and in fact, Augustus own divinity for being a family member of Julius and his successor.

## 10. Mythological types



Fig. 43. Augustus. Denarius. Struck 19 BC. Bare head of Augustus right, on obverse. Reverse: Tarpeia standing facing, hands raised, buried to the waist in a pile of shields. The message on this coin is associated with the story and the legend that portraits. Tarpeia was a Vestal Virgin who betrayed the city of Rome to the Sabines when they attempted to rescue their wives from the Romans. She asked the Sabines for what the soldiers wore on their arms, meaning the gold bracelets, in payment for her betrayal. The Sabines were offended by her greed and treason and gave her the price literally, crushing her under the weight of their shields. The message that indirectly carries is that all the traitors to Rome pay with their lives. Since then, all the traitors were executed and punished in the Tarpeian Rock, the very same place where Tarpeia died.

## 11. Architecture



Fig. 44. Augustus (27 BC-14 AD). Cistophoric tetradrachm. Pergamum, 19-18 BC. Triumphal arch inscribed, decorated with legionary eagles left and right and surmounted by emperor in quadriga right.



Fig. 45. Claudius. Denarius. 41-54 AD. Portrait of emperor on obverse. Triumphal arch or reverse with equestrian statue of emperor on top of the structure, flanked by trophies on both sides. This coin not only depicts the monument, but also commemorates Claudius' victories in Britain.



Fig. 46. Nero. Sestertius. 54-68 AD. Aerial perspective of the port of Ostia. Originally was a military port to protect the mouth of the Tiber and its access to Rome. In 42 AD the emperor Claudius started the construction of a major port for Rome's grain supply. This project was not completed until the reign of Nero, who issued this coin to commemorate this event. It shows with detail several ships at anchor within the circular breakwater. The entrance, at the top, was marked by a lighthouse and a statue of Neptune. At the bottom, the river god Tiber reclines where the river flows into the harbor. This port will be extended by Trajan later.



Fig. 47. Trajan. Denarius. 112-115 AD. Statue of Trajan on horseback, holding spear and Victory. This reverse shows the famous equestrian statue of Trajan in his Forum that got lost in time.



Fig. 48. Trajan. Denarius. 112-115 AD. Column of Trajan, surmounted by his statue and resting on a two-tiered base, flanked by eagles. The spirals and dots indicate the famous relief on the monument that narrates, on an ascending spiral, the events of Trajan's two Dacian wars, still in place today. The statue of Trajan on top of the column is extending

his right hand and holds a spear in his left. The base has a door in the center flanked by reliefs showing Victories on the left and right.



Fig. 49. Trajan. Denarius. 112-115 AD. Via Traiana reclining left, head right, holding wheel and branch. This reverse commemorates Trajan's construction at his own expense of the road between Beneventum and Brundisium. If no one knows what you do, you do not get any credit for it. The emperors made sure that would not happen.



Fig. 50. Trajan. Sestertius. 103-111 AD. Trajan's Danube bridge, depicted as a single arching span between entrance and exit towers topped by statues; a boat in the river below.

The main purpose of this brief introduction to the numismatics related to the mass media communication is to reveal some of the many messages that ancient coins transmit, and also to show the infinite possibilities that these many themes can offer to the historians, numismatists, and scholars with one common thought in mind: the mass media started centuries before most people could think, and the coin was the perfect and durable vehicle, a witness of history and time that still survives and will last longer than our own lives.

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**Women in Administration: Understanding the Relationship between Occupational Stress  
and Health Risk**

**Presenter:** Renique Kersh

**Topic Area:** Educational Administration/Higher Education

**Format:** Poster Session

**Description:**

The increasing demands for women in administrative positions in higher education may lead to increased stress and a detailed examination of the relationship between occupational stress and health risk, as well as examining effective coping strategies will be explored.

**Presenter:**

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Abstract

Studies have shown that working women's physiological response to stress has increasingly led to an increase in health risk (Ganster and Rosen, 2013). Therefore, employing effective stress management strategies is key to short-circuiting the potential long-term physiological and psychological damage that may occur (Lazarus, 1966; Frankenhaeuser, 1991). The increasing demands for women in administrative positions in higher education may lead to increased stress and a detailed examination of the relationship between occupational stress and health risk, as well as examining effective coping strategies will be explored.

## **Description**

1. To provide national data on health issues that are increasingly concerning for women
2. To provide survey data on the relationship between occupational stress and health risk for women in administrative roles in higher education
3. To provide survey data on coping strategies most employed by women who participated in the research study
4. To promote the further exploration of occupational stress in higher education environments and the role colleges and university can play in ensuring the health of employees

## **Program Description**

This poster presentation will cover the literature around occupational stress and health risks for women, working women and women in higher education. Further, the poster will provide information from the literature around coping strategies. The researcher will be conducting a mixed methods study on the relationship between occupational stress, strain and coping for women in administrative roles in higher education. As part of the study, the occupational stress inventory-revised will be used in order to determine the stress and coping scores for a convenience sample of 85 to 130 participants. Additionally, the health status questionnaire-12 will be incorporated to determine both physical and mental health risk. Correlation analysis, multiple regression and ANOVA will be used to study both surveys, along with demographic and institutional data. Further, a number of open-ended questions will also be analyzed using NVIVO software and independent review. The results of this study will be presented as part of the poster presentation along with recommendations for next steps.

## **Conceptual Framework Used**

A number of researchers have sought to understand and define stress (Lazarus, 1966; McEwen, 2002; Selye, 1983). In general, experiences or perceptions often lead to increased load. The amount of load and an individual's personal resources determine how the body will respond in order to achieve a sense of balance (homeostasis). Often, individuals with increased stress levels develop habits like sleep deprivation, overeating, feelings of anxiety, perfectionism or lack of exercise (McEwen, 2002; Buckley, 2002). These habits are considered maladaptive and are counterproductive to the body's ability to create homeostasis (McEwen, 2002; Selye, 1983). Others exhibit more adaptive habits like engaging in recreational activities, psychological thriving or reframing stressors in order to achieve balance, self-care and engaging in social interactions with others (Fusilier, et. al, 1986; Epel, McEwen and Ikovics, 1998; Osipow, Doty and Spokane, 1985). How individuals cope with increased stress impacts their physical and psychological well-being and may influence their long-term and short-term risk of illness.

Occupational stress has been linked to a number of chronic illnesses like cardiovascular disease and high blood pressure (Din-Dzietham, Nembhard, Collins and Davis, 2004; Ganster and Rosen, 2013; Smith, Johal and Wadsworth, 2000). Further, studies have shown increases in absenteeism, psychological distress and the development of burnout among workers with increased stress levels (Westerlund, et. al, 2010; Ganster and Schaubroeck, 1991; Layne, Hohenshil and Singh, 2004; Ganster and Rosen, 2013; Demerouti, et. al, 2001).

There are a number of models that have been developed in order to better understand occupational stress (Spokane and Osipow, 1983; NIOSH, 1999). Those who are constantly challenged by stressful work conditions, without effective moderation by individual and/or situational factors are more likely to have a higher risk of injury and illness (NIOSH, 1999). Osipow (1991) suggests that the perceptions of the work environment that cause stress may be mediated by how individuals cope with this stress and what

personal factors exist. A number of other researchers have validated this notion asserting that coping strategies have the potential to effectively moderate occupational stress outcomes (Jackson, 2004; Layne, Hohenshil and Sign, 2004; Osipow and Davis, 1988; Lazarus, 1966; Selye, 1983; McEwen, 2002; Osipow, 1991). For the purpose of this study Spokane and Osipow's (1983) model of occupational stress which explores the relationship between stress, strain and coping resources, will be used as a theoretical framework.

**Additional Documents:** A one-page document will be provided for individuals who visit the poster. If appropriate technology is available, the presenter will also provide a brief presentation alongside the poster. Individuals are free to discuss and engage the researcher in a dialogue.

## **Financial Inputs and Educational Outputs of IEPs That Really Work for Students**

### **Introduction**

Generating and implementing an individualized education program (IEP) is a major investment not only of school funds but also of professional time. This raises questions about cost effectiveness that remain unanswered. An IEP is expected to generate enhanced student performance, but does it? This article will examine the IEP process against its costs to determine if spending is justified.

In 1977, the individualized education program (IEP) process was placed into law for two reasons: to give students with disabilities adequate educational opportunities, and to give parents of special needs students a voice in their child's education. Today, all levels of public education are affected by the IEP process including: district administrators, teachers, parents, educational advocates, and students. However, little attention has been given to how cost-effective the individualized education program process is. In 2004, the Center for Special Education Finance reported that \$77.3 billion was spent to meet the needs of IEPs. In 2007, Winters & Greene reported that 13.7% of publicly educated students had an IEP. In 2012, the President's Commission on Excellence informs us that 21.4% of the nation's \$360.6 billion education budget is spent implementing individualized education programs. With so much invested in the IEP process, what does it produce? This article attempts to determine if the IEP process adequately meets the needs of disabled students, gives their parents a voice, and accomplishes this in a cost effective manner.

**Examining the individualized education program process and its efficacy**

As both a process and a document, the IEP was meant to carry out the law's intent for the appropriate education of the disabled (Smith, 1990). To understand special education's current state, it is necessary to have an understanding of its past. The individualized education program process was the main element of Part B of the Education for All Handicapped Children Act of 1975. As a result of this act, every public school in the United States incurred the mandated costs of the individualized education program process, and IDEA became an obligated part of every U.S. public school's annual budget.

IDEA was passed to ensure that all schools would meet the needs of every student classified as disabled. Schools were expected to appropriate their annual budgets into creating new environments for these children, environments with as few obstacles to the child's success as possible. Cost was not to be a factor in the creation of these new environments. The IEP process consumes 40% of the money spent on all students in the United States (Center for Special Education Finance, 2012; Menlove et al., 2001) yet we do not know what the result of this spending is. Though IDEA mandated cost not be a factor, cost became a major issue.

Special education costs have significantly increased. In the past ten years, the number of learning support students has risen by 30% (The Center for Special Education Finance, 2012). In 2012, the special education population was six million children nationwide (National Education Association, 2012). The Center for Special Education Finance (2012) also reports that nearly every general education classroom in this country has learning support students entitled to special services.

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Twelve years after the adoption of IDEA, we learned that early intervention could defer IEP spending. Will (1986) found there was a positive correlation between the age at which intervention occurs and the level of success that can be expected as a result of the intervention. In other words, if we intervene early, fewer children will need individualized education plans later. Will suggested that a systematic intervention might best prepare children for the more formal and demanding structure of later grades. According to Will, the IEP process would be most effective if children were identified as early as possible, but this did not happen. Early identification of special education students did not decrease the funds needed for future services, and thereby decrease the overall special education budget. Instead, from its genesis in 1974 to the year 1990, the clear intent of the IEP document, to implement special education law, became mired and confusing (Smith, 1990). Legally, the importance of an IEP could not be ignored, yet that importance was becoming increasingly unclear.

Will (1986) also found that to make the learning support process effective, reform must be done at the building level. His findings were ignored in favor of the class-by-class modifications that are made today. Will further demonstrated that building level administrators must be empowered to assemble appropriate professionals, and other resources, for delivering effective, coordinated, comprehensive services for all students based on individual educational needs rather than eligibility for special programs. In other words, Will found that special education was most effective on an issue-by-issue basis rather than the overall labeling process that has found acceptance.

Originally, the IEP was intended to be a blueprint for special education services and how they were to be implemented on a child-by-child basis. Every section of the IEP was meant to relate to a specific element of a student's education including: needs, goals, objectives,

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placements, evaluation criteria, present levels of performance, duration of programs and modifications (Dragsgow, Yell, & Robinson, 2001; H.Res. 5, 1997). IEPs were also to regulate meeting dates, parental consents, and student accountability, as well as responsibilities of education agencies (Huefner, 2000).

We know what IEPs are meant to do, but how do we know if they are doing it? How is the effectiveness of an IEP determined? Kayale & Forness asked this question 13 years ago and found that practically from its genesis, special education has been given the task of evaluating its own effectiveness to determine whether it is working on a cost-benefit basis (Kayale & Forness 1999); but how special education was to do this had not been determined. In 2013, a method to evaluate the effectiveness of the IEP process still does not exist. While trying to measure its own effectiveness the field of special education has developed into an amalgamation of different modified instructional techniques and methods. Without a clear intent of this collaborative team approach, the true purpose of the IEP process cannot be fulfilled (Schrag, 1996; Smith, 1990).

In addition, a disproportionately large amount of special education funding is spent before special education services begin. According to the Center for Special Education Finance (2012) previous studies tell us that a substantial portion of special education funds are spent on determining the eligibility of the students. This money is not being spent on the IEP, it is being spent determining if the IEP is necessary. These services include: pre-referral activities, referral activities, initial screenings, ongoing assessments, evaluations, and reviews. Occasionally, funds are spent preparing IEPs for students who will later be determined ineligible for special education. None of these prerequisite services directly modify the students' educations. Funds pay the salaries of assessment staff members including: psychologists, counselors, social

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workers, and consulting teachers. Now that we have examined the individualized education process, we turn our attention to examining its cost.

### **Investment in the individualized education program process**

Special education costs can be difficult to decipher. Currently, special education finance studies are conducted about once every decade by the Office of Special Education Programs OSEP (President's Commission on Excellence, 2012). In this section, we will attempt to simplify the financial investment in the individualized education program process, identify trends, and project future expenditures.

The Center for Special Education Finance was created to determine the cost of special education spending in the United States. They arrived at their figures by seeking answers to a series of questions. These questions were:

- What are we spending on special education services for students with disabilities in the U.S.?
- How does special education spending vary across types of public school districts?
- What are we spending on due process for students with disabilities?
- What are we spending on transportation services for students with disabilities?
- How does education spending vary for students by disability?
- What factors explain the differences in spending?
- What role do functional abilities play in explaining spending variations for students with disabilities?
- What are we spending on preschool programs for students with disabilities?
- Who are the teachers and related service providers who serve students with disabilities?

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- How are special education teaching assistants used to serve students with disabilities?
- What are we spending on special education services in different types of schools?
- How does special education spending vary across states classified by funding formula, student poverty, special education enrollment levels, and income levels?

In 2004, the Center for Special Education Finance reported that for the 1999-2000 school year \$77.3 billion was spent to meet students' individualized education programs. This equates to spending an annual average of \$12,474 to meet the needs of one IEP for one student. Another one billion dollars was spent educating students placed in other special needs programs (e.g., Title I, English language learners, or gifted and talented students), bringing the per student average to \$12,639.

Since additional time and school staff becomes necessary to educate the learning disabled student, public schools, on average, spend two to three times as much on a student eligible for special education services as they do on a student without disabilities. Annually, it costs about \$6,555 to educate a student without an IEP. Compare this to \$12,639 for the student with an IEP. The difference is \$6,084 (Center for Special Education Finance, 2004).

The percentage of the United States' education budget spent implementing IEPs continues to increase. In the 1977-1978 school year, the total portion of the United States education budget for special education services was 16.6%. This increased to 21.4% in the 1999-2000 school year. These percentages do not include monies spent on school facilities. The President's Commission on Excellence (2012) informs us:

Total spending to educate students with disabilities including regular education, special education and other special needs programs combined represents 21.4% of the \$360.6 billion total spending on elementary and secondary education in the United States.

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Special education costs have demonstrated that they will continue to rise. Consider that in the 1985-1986 school year the average cost of educating a student with an IEP was \$9,858. By the 1999-2000 school year this cost had risen to \$12,474. This yields an annualized growth rate of 1.7%. In that time period, the growth rate itself increased to 2.0% (President's Commission on Excellence, 2012). By using this 2.0% annualized growth rate we can estimate the current annual cost to educate an IEP student at \$15,468. However, \$15,468 is most likely an underestimation as trends suggest the growth rate will continuously increase at a faster relative rate.

Not only are the costs of special education increasing, but the number of students qualifying for an individualized education program is sharply increasing. In 1977, 8.3% of all students qualified; in 2004 13.7% qualified (Winters & Greene, 2007; Center for Special Education Finance, 2004). This equates to a 0.2% increase each year. Using this as a basis, we can estimate the special education population for the year 2013 at approximately 15.3% of the total student population.

To conclude, national expenditures for special education total an estimated \$50 billion, an additional \$27.3 billion is spent on regular education services for learning support students, with another \$1 billion spent on other federally funded special needs programs (e.g., Title I, English language learners or Gifted and Talented Education) (President's Commission on Excellence, 2012). We now have an understanding of how much the individualized education program process costs. We also have an understanding of the IEP process itself. Let us now turn to the results, the outcomes for the child and his/her family.

**Assessing the outcomes for the child and family**

Special education has been thoroughly studied, and it has developed a substantial research base for judging the effectiveness of its techniques (Kayale & Forness, 1999). Is special education working? The answer, unfortunately, is no - at least not at the level intended. However, it is not the individualized education program process that is at fault. The fault lies in the follow-through at a district level.

In identifying effective techniques, certain crucial and neglected components of the individualized education program surface. It is these components that will create IEPs that work for students. These components (in order of effectiveness) are parental, student, and teacher involvement in the individualized education program process.

These three components are typically the most time-consuming for the learning support coordinator to include in the IEP team meeting. Special education law mandates that school districts adequately incorporate these IEP components, yet school districts, particularly learning support coordinators, persist in their insolence. We will now look at each of these components and the outcomes they produce for student and family.

If anything can be said for making an IEP work for child and family, it is that the involvement of parents create working IEPs. Fish (2006) found that students who are more successful as a result of the individualized education program process are children whose IEP meetings consisted of positive and equal interactions between educators and parents. In as early as 1998, Pruitt et al. contended that parents should possess equitable roles during IEP meetings. Pruitt et al. (1998) had determined that parents possess essential insight concerning their children and that this insight facilitates the success of the IEP.

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Parental participation is not a suggestion; the learning support coordinator must make every effort to include the parents in the IEP process. Parental participation in the individualized education program process is mandated by law. However, despite legislation, parents still do not participate (Deslandes, Royer, Potvin, & Leclerc, 1999; Valle & Aponte, 2002).

While research has demonstrated that the parent is the most effective member of the IEP team, it also demonstrated that for years parents have felt undervalued. Goldstein (1993) and Kroth & Edge (1997) found that many parents feel guilty, intimidated, disenfranchised, and alienated towards educational systems in general, and that attending an IEP meeting was no exception to these feelings. Teachers devaluing parent input at IEP team meetings has resulted in parents keeping quiet, or not attending at all. Fish (2006) found that parents believed that their children's teachers did not value them as equals, nor did they value their input as being as important as their own.

Rock (2002) found that decreased parental feedback and participation in IEP meetings was generating legally inappropriate and educationally unsound educational programs for students receiving special education services. In 1996, Simpson found that parental roles were not increasing in IEP team meetings and positive relationships between parents and educators were not being formed. This was occurring despite laws that regulated the parental involvement under P.L. 94-142 (Simpson, 1996). To increase the effectiveness of the IEP process, parents must feel they are a valued member of the IEP team. According to research they are the most valuable and effective member of the IEP team. In 2001, Polloway, Bursuck and Epstein found schools can effectively facilitate communication between parents and teachers through the employment of non-threatening and positive communication strategies. The learning support

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coordinator must realize the importance of parental participation and be sure to make every effort to facilitate the parent's participation.

Werts, Mamlin, & Pogoloff (2002) concluded that passive participation among parents in the IEP process is likely to hinder productive planning of a student's education. To arrive at this conclusion, Werts, Mamlin, & Pogoloff (2002) found that parents often view the IEP meeting as an opportunity for educators to brief them on their failures in raising their children; as a result parents were embarrassed to attend the meetings. When they did attend, parents provided little input due to their intimidation.

Fish (2006) conducted a case study interviewing parents of students in individualized education programs. Parents expressed the following concerns:

- Parents thought the IEP process was being abused or neglected.
- Parents indicated that teachers did not update IEP goals.
- Parents believed that teachers did not update goals in order to decrease paperwork.
- Parents thought teachers did not want to make lesson plan adjustments.
- Parents believed that classroom teachers documented sufficient student progress toward IEP goals in order to adhere to IEP documentation procedures despite objectives not having been fully mastered by the child.
- Parents believed that there was a stack of papers already completed and that they only attended the meetings to sign off on paperwork they had nothing to do with creating.

Fish (2006) quoted parents as saying:

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- “It (referring to implementing an IEP document) is in the paperwork and on the recording. It is written in the minutes, but it’s just never done. It is a meeting they have to have, but really a lot of it is never really carried through.”
- “You come up with these good ideas, but then if the teacher doesn’t do them, then that is very frustrating.”
- “Note that these teachers hardly ever read the IEP’s. Most of those teachers get folders and they never even open them up.”
- “They have it all figured out before you get there.”
- “Half of those boxes are already checked and filled out. It’s all just cut and paste.”
- “We read it, and we are asked to sign it. So, all of the decisions have been made without parental input.”
- “They hand you your booklet, or procedural safeguards, and so forth, but I think it can be difficult to understand. You’re just overwhelmed with the information that they give you and no one explains it to you.”

When Fish (2006) asked parents what they thought school districts could do to improve IEP meetings, parents provided the following feedback: IEP meetings could be improved by making these conferences more of a democratic process where parents felt they were equal contributors. Make special education law easier to understand. Make the IEP process easier to understand.

In addition to parent involvement, student involvement creates IEPs that work for students. Research results from the past two decades suggest that youth who are involved in their IEP development are more likely to (a) achieve their goals (e.g., Kennedy & Haring, 1993; Perlmutter & Monty, 1977; Powers et al., 2001; Realon, Favell, & Lowerre, 1990, Van Ruesen,

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Deshler, & Schumaker, 1989, (b) improve their academic skills (Schunk, 1985), (c) develop important self-advocacy and communication skills (Mason, McGahee-Kovac, Johnson, & Stillerman, 2002, (d) graduate from high school (Benz, Lindstrom & Yovanoff, 2000), and gain better employment and quality of life as adults (Furney & Salembier, 2000; Halpern, Yovanoff, Doren, & Benz, 1995; Wehmeyer, Agran, & Hughes, 2000).

In terms of creating IEPs that work for students, the involvement the student has in their own IEP's development is second only to parental involvement. Student involvement is also mandated by law. Yet, only 48% to 64% of adolescents studied attended their IEP meetings (deFur, Getzel, & Kregal, 1994; Grigal Test, Beattie & Wood, 1997; Trach & Shelden, 2000). These results are consistent with a study by Williams and O'Leary (2000), who found that approximately one-third of U.S. states were not in compliance. In these states, students were not invited to their IEP meetings, even when transition issues, such as career placement, were to be discussed. In some instances, students were being placed before their IEP goals were written. (Dragow, et al., 2001).

If a student is not afforded participation, the school district can be held liable. IDEA makes it clear that children and youth with disabilities ages 14 to 16 are to be invited to participate in their IEP meetings. IDEA goes even further to mandate IEP team decisions be based on the students' interests and preferences (34 C.F.R. 300.344 (b) and 300.29).

Not allowing students to participate in their own IEP meetings is a practice that has been occurring for years. Aside from the learning support coordinator saving time and paperwork, in 1998, Wehmeyer & Schwartz pointed to another possible reason for this negligence. They demonstrated this to be an issue developing out of a lack of teacher preparation. Wehmeyer & Schwartz stated: 31% of teachers surveyed reported that they wrote no self-determination goals,

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and 41% indicated they did not have sufficient training or information on self-determination.

Wehmeyer & Schwartz demonstrated that despite IDEA requirements, research results, teacher perceptions, and strong encouragement from disabilities rights advocates, many youth had been left out of the IEP's self-determination activities.

General education involvement in the IEP team process has consistently shown itself to be a lacking component of the IEP process. In the '80s and '90s general education teachers rarely attended IEP meetings nor participated in the IEP development process (Ammer, 1982; Pugach, 1982, Smith, 1990). When general education teachers did attend IEP meetings, they failed to interact with special educators (Ysseldyke, Algozzine, & Allen, 1982). This has created a myriad of problems that compromise an effective individualized education program.

In 2001, Menlove identified a number of these problems noting that: Regular education teachers report that they do not know how to prepare for IEP team meetings, and feel they are trying to catch-up with the special education teacher. These teachers feel they do not have enough time to complete what they are expected to bring to the meeting, and feel disorganized. Regular education teachers express a need to understand the value of the IEP document, and many times report not being invited to the IEP meeting. When invited to the IEP team meeting, many regular education teachers report that they view the meetings as gripe sessions where people attack students. Regular education teachers are not sure if they are at the meeting for input or just for signatures on forms, and feel IEP development is not always collaborative or their input valued. These teachers feel they are ignored at, and prior to, the IEP meeting.

In 2001 Menlove's research warned us that: Regular education teachers think there is too much focus on paperwork and that the paperwork is more important than the student. Regular education teachers don't relate the IEP to what students are learning, and think the IEP goals are

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unrealistic and vague, do not believe student progress is addressed, forget the IEP goals altogether, do not know how to implement the IEP goals, and do not know who is responsible for assessing the IEP goals. Regular education teachers felt as though the IEP process didn't address problems in general education, so they did not perceive that it would benefit students in their classrooms. Regular education teachers think that IEPs do not focus on what the student can do and only focus on what they cannot do. Will (1986) noted this finding as well, yet another consequence of the way we think and go about educating students with learning problems is that special programs frequently address failure rather than prevention. Menlove (2001) also noted that a related frustration regular education teachers expressed was a disconnect between goals, objectives, and services developed in the IEP meeting to what happens instructionally in the classroom.

One final consideration, the time it takes to develop an individualized education program has been demonstrated to have an adverse effect. Only 20% of the special education teacher's class time was spent on teaching (Vannest, Hagan-Burke, Parker, & Soares, 2011). Adding the responsibilities of developing an IEP to the learning support teacher's day results in inadequate instruction time.

### **Conclusions**

Learning support costs are measured only once every decade, and, to date, no one has figured out an adequate way to measure the effectiveness of the IEP process. Over the past 10 years, the number of U.S. students enrolled in special education programs has risen 30%, and three out of every four of these students now spend part or all of their school day in the general education curriculum. As a result, nearly every general education classroom across the country includes students with disabilities. Each school and district is required to determine the best way

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to conduct these programs and judge the most efficient way to pay for them (National Education Association, 2012).

If the past is an indication of the future, special education costs will continue to rise. We can relatively safely predict that Congress will increase federal funds for special education. However, those funds will not adequately cover special education's rising costs.

For decades, the individualized education program process has revealed itself to be ineffective. It has long since reflected a flawed vision of education (Will, 1986). To date, fulfillment of the individualize education program process eludes us. At best we are met with mixed results. In 1990, Smith had already found that there was overwhelming evidence that IEPs failed to accomplish their mission, and that little was being done to rectify the situation. By 1999, there had not been a single study yielding conclusive results for IEP effectiveness (Kayale & Forness 1999), and by 2013, the U.S. Department of Education is yet to have any data that can be used to answer questions about costs, expenditures, or fiscal planning for the individualized education program process. Nor can they offer any information pertaining to the provision of special education services.

The research done for this article has determined that, to date, not one study has been able to identify a pool of findings to support IEP effectiveness. Support for the IEP process is becoming increasingly necessary to justify spending as education researchers, along with school district officials, continue making claims that special education students are draining resources away from regular education students (Winters & Greene, 2007).

As this article indicates, three of the most productive elements of the IEP process are routinely disregarded to save time and paperwork. These elements are parent involvement, student involvement, and regular education teacher involvement. This negligence results in an

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ineffective process. Despite legal mandates, parents are habitually left out of the IEP process and not valued as equals (Fish, 2006, Deslandes, Royer, Potvin, & Leclerc, 1999; Valle & Aponte, 2002). IDEA mandated student participation is regularly neglected (IDEA, 34 C.F.R. 300.344 (b) and 300.29). General education teachers continue to be left out of the IEP process (Ammer, 1982; Pugach, 1982, Smith, 1990). All this occurs as the most recent estimate of \$77.3 billion is annually spent to meet the needs of the IEP process (Center for Special Education Finance, 2004). The individualized education program process has become a system of misappropriated school funds and professional time. However, this issue can be clarified and settled by adhering to the legal mandates of adequate parent, student, and teacher involvement. The IEP process can then result in IEPs that really work for students.

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Title: Feminist EFL teachers' teaching beliefs and practices in Japanese universities

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## ABSTRACT

The purpose of this study is to explore feminist EFL teachers' teaching beliefs and practices. The exploration includes determinations of how they develop their feminist teaching beliefs and how their feminist teaching beliefs are reflected in their teaching practices.

Nine Japan-based feminist EFL college teachers participated in this study. I employed a qualitative narrative study approach by triangulating multiple methods such as open-ended questionnaires, interviews, classroom observations, teacher journals, and e-mail communications. Data was collected from March 2011 through August 2013. The teachers' narratives were analyzed within the framework of feminist theories and pedagogies. The results of interviews with the nine Japan-based feminist EFL teachers revealed that they had similar but slightly different feminist teaching beliefs. They developed their feminist teaching beliefs through their feminist identities, personal learning and teaching experiences, interactions with other feminist teachers. Results suggested that while six participants of them reflected their feminist teaching beliefs to their teaching practices, three participants did not. Six participants taught about gender issues and incorporated gender issues into the lesson. Even though other three participants did not teach about gender-related topics in their classrooms, they were concerned with critical thinking, empowerment, and care. I found that nine participants were concerned about not only what they taught teaching but also how they taught. I also found that institutional constraints such as unified curricular and assigned textbooks prevented them from teaching about gender-related topics in their EFL classrooms.

The study is intended to help understand what teaching beliefs

feminist EFL teachers hold and how they reflected their teaching beliefs in their teaching practices – including curriculum and materials design, classroom management, and innovation related to other aspects of teaching about gender issues.

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6. Abstract

A large number of English language learners (ELLs) in secondary school are long-term ELLs who have attended public schools in the United States for seven years or more without reaching a fluent level in English (Capps, Fix, Murray, Ost, Passel, & Herwanto, 2005; Olsen, 2010). In spite of the growing presence of long-term ELLs in secondary schools, little research has been conducted on this population. In particular, the field needs research that investigates long-term ELLs' educational needs from the students' perspectives on their learning experience, which can be a fundamental source to understanding the underachievement of this population.

This qualitative study explored the reality of long-term ELLs' academic struggles through their schooling history, and perceptions of their learning experience. Thirteen long-term ELLs, ages ranging from 15 to 19, at a high school located in central Texas participated in this study. Data were generated from in-depth interviews and various documents, including students' cumulative folders, language proficiency assessment records, and state assessment data. The constant comparative method of the grounded theory approach was used as the primary approach for data analysis.

The findings revealed that long-term ELLs in this study did not sufficiently acquire academic language skills throughout their schooling, resulting in their limited access to the full rigor of the curriculum and further falling behind in learning. In addition, more than half of the participants were either referred to special education or retained during elementary years in the hope of improving their academic skills. However, the participants experienced on-going failures throughout school. Without strong language and adequate academic services for this population, simple retention or placement in special education does not effectively serve these learners.

Despite their academic underachievement, participants in this study did not perceive themselves as struggling students but as active learners. They viewed their progress in learning as a considerable accomplishment and believed it would lead to college and career readiness. This finding has significant implications for understanding the nature of struggling long-term English language learners' academic challenges and developing adequate instructional systems to address these gaps in learning.

## **Submission to the Hawaii International Conference on Education**

### **Engaging with the Future in Teacher Education**

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Teacher Education is undergoing change in conception, location and purpose in many countries. To cater for the future, the key question arises as to what Teacher Education will or should look like in ten years' time. What trends will be influential in determining its structure? How best can teacher educators prepare their students for schools of the future, and for a rapidly changing world?

To develop an agenda for future research in Teacher Education, the above questions must be considered. Added to these, are other important questions. What is the role of technological development? How may such development affect schools, teachers and students? How will it influence the way we organize education in the future? How do we prepare our students for the unexpected? Similar questions to these have formed the theme of conferences on Teacher Education (ATEE, 2013), symposia (Burden et al., 2012) and a special issue on Teacher Education (Schuck & Aubusson, 2013) and are becoming increasingly relevant to teacher educators.

Given these important and pressing questions regarding Teacher Education futures, the authors suggest that an agenda for future research in the area is essential. Such research should consider what questions need to be investigated to inform the future of Teacher Education. It should also consider what tools are helpful in this investigation. The authors suggest that the use of scenarios in Teacher Education is a helpful way of conceptualising the impact of different issues and trends on Teacher Education. Scenarios provide a means of reflecting on, and imagining different futures for Teacher Education (Snoek, 2003).

The aim of this session is to present recent research that used scenario thinking to explore teacher education futures and to engage in discussion with other teacher educators to articulate the most pressing questions that need to be addressed in research on Teacher Education futures. Finally we

intend to use the session to investigate the feasibility of an international research collaboration in the area of Teacher Education futures.

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## PRESENTATION OUTLINE

### WHAT ARE OUR CHALLENGES AS EDUCATORS IN A CONTEMPORARY LEARNING SETTING FOR THE ASD ADOLESCENT?

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“The way I see it, a huge mistake many teachers and parents make is to try to make people

“The way I see it, a huge mistake many teachers and parents make is to try to make people with autism or Asperger’s into something they are not.” **Temple Grandin** [*“The Way I See It”*]

*Autism is not a disability; it is a difference*

Adolescents on the autism spectrum have unique challenges that are often hard for their parents, teachers, and peers to understand. While adolescence is a difficult time for most people, it is especially tough for teens who struggle to understand ever-changing social expectations. We all remember the stress of our secondary school years. Our bodies were changing, our friends were changing, and all of the rules around us were changing. Since people on the autism spectrum rely on consistency and predictable social environments, they enter this phase of life at an extreme disadvantage. Supporting them during adolescence requires an understanding of the syndrome and knowledge about strategies that will give them the skills they will need to thrive and reach their potential. In simplest form, Theory of Mind is the skill to perceive an event or situation from another person’s viewpoint. It encompasses all social thinking skills that usually develop without specific instruction from an early age, and it is wrongly assumed, including by teachers, that all people possess these skills at varying degrees; this is not true within autism.

Without the right support, adolescents on the autism spectrum retreat into themselves during this period. They express extreme loneliness and confusion, and are at risk for acting out behaviourally. There is an increased risk of depression and suicide during these years as well. As unpredictable as their social world is during adolescence, their response to this stress can be equally unpredictable.

This poses a major concern for parents and educators. Autism is estimated to be about one in every 110 births. Therefore, more students with autism enter primary and secondary school every year and their struggles are noticeable.

As our education systems have improved dramatically over the last 20 years, education for students with special needs, both developmental and behavioural, has become more inclusive. Mainstream education teachers are better trained, and supports for students with special needs are much more understood and available. However, students with autism present a different set of challenges than students with other developmental disorders. While most children with special needs are very social and readily express their needs and wants, students on the autism spectrum struggle with communication and social understanding. Their behaviour can appear unpredictable to an untrained professional. As they enter adolescence, the volume gets turned up on every aspect of this syndrome. While educators are struggling to find a way to better serve these students, more parents are struggling to cope with their child’s adolescence as well. This goes well beyond the typical acting out or sullen behaviour many teens express. They are not retreating from parent control and wanting more time with friends; they often have no friends. As lonely as they may report they are, they desperately seem to want to be left alone.

Their school experience is more threatening than ever before. They may not feel safe, and may come home with heightened sensitivity, anger, and sadness. Teens with autism have difficulty expressing how alone and frightened they feel. Many regress into the interests they had when they were younger, or spend their time in repetitive

activities, attempting to control their world in the simplest of ways. They are more easily angered, which is common with any form of depression.

### **In brief:**

ASD Core features:

- Communication
- Social Skills
  
- Social interaction
- Social Behaviour
- Strategies

Individuals with autism have very different characteristics. It is not an easy question to answer how to help such a diverse group of teens. They range from being nonverbal to very expressive. Some struggle with the simplest of social interactions, while others interact readily but inappropriately. Behavioural challenges can range from refusing to make eye contact to physical aggression. Compulsive behaviour can be as simple as wanting their desk arranged the same way each day or as complex as body rocking or repeating the same sentence over and over. There is no single answer, but multiple approaches to consider.

-  **Maintain Perspective**
-  **Make It Visual**
-  **Foster Independence**
-  **Promote Quality of Life**

It is very hard to build an educational program that needs to succeed on so many levels to build independence and ensure optimal quality of life. Without a shared vision and a well-thought out plan, one that includes as many people as possible, it becomes confusing and difficult to stay on task. Specifically, educational settings for adolescents need to address the following:

- Proactive programs: Teach teens various self-management strategies that result in social successes. These strategies work to reduce social anxiety, prompt appropriate social skills, and identify and organise social opportunities. For example, an individual's self-management program may involve learning to avoid specific social situations that result in negative outcomes, and identifying social opportunities to practice new skills with success. It may also include specific behavioural strategies to reduce anxiety, and self-reward successes. If there are social behaviours that have proven to be stigmatizing with peers, the program would also support replacing those behaviours with a more appropriate behaviour that serves the same social function.
- Assess all behavioural challenges and find meaningful replacement behaviours. By adolescence, an individual has developed many ways of coping with social confusion and stress. There may be behaviours that are getting them into trouble, or that are getting them teased, or that are isolating and resulting in few opportunities to practice social skills. Assess the function of each behaviour and work with the individual [and their peers] to develop and practise better options. The result is a new set of social skills that are developed strategically to pinpoint existing needs. Apart from basic skills necessary for social success, these strategic skills serve to remove barriers and set the stage for developing broader social skills. For example, if the student raises his voice to an alarming level whenever a conversation becomes difficult, that behaviour needs to be replaced with a more appropriate conversation skill that serves the same function, reduces anxiety, and changes the social exchange. There are limitless ways to avoid difficult topics or social situations (e.g., presenting a new topic, providing a compliment to redirect the conversation, asking a question, excusing oneself appropriately). Options need to be identified and practised to best fit the person and the social context.
- Create social opportunities in which a teen can experience success and have a better chance of developing age-appropriate friendships. Developing and nurturing a friendship takes ongoing assessment, creativity, and planning. As individuals learn skills to better understand the perspective of their peers and how to engage them more affectively, they need opportunities to practice and be appropriately challenged as well. This process can be the most difficult. It involves working closely with the family and anyone in the family's network who can be involved, as well as school personnel, and community opportunities. Each child's social supports represent a new puzzle to solve. Adolescents with ASD who are doing well [good academic abilities] can be overlooked in the school system as not needing the support given to others; this is a fallacy.

**The pervasive nature of social skills impairments should always be taken into account by educators.**

1. Be realistic
2. Focus on talents not deficiencies
3. Set life skills – setting a table, eating at a table, cleaning, handling money
4. Teach flexible thinking
5. Provide and accept diversity of subject matter, levels of ability and variety of evaluation tools
6. Practise skills of group dynamics
7. Model consideration and acting socially
8. Expect good grooming; however, it may take time for the sensory-challenged student to find products that are not causes of discomfort
9. Multi-tasking is not a reasonable expectation by teachers of ASD students
10. Allow some 'downtime'
11. Avoid installing fluorescent lights; at worst, limit the lighting, or provide a specific area lamp for the ASD student.
12. Set expectations: for example –
  - a. Limit allowed questions to 2 per period
  - b. Remind ASD students not to make noise or talk to themselves in exams
  - c. Monitor interruptions and challenges to what other students may be offering orally in class discussions.

Self-esteem can be built in small steps through real achievements. The literal mind of the ASD student requires tangible, meaningful accomplishments recognised with praise.

We must teach with a sense of humour and always with compassion and consideration. We are mixed ability schools and our education system therefore addresses not only mixed ability but emphasises focus on the individual; accommodating differences, therefore, is an expectation, not a hope.

**Preparing your ASD student for employment**

1. Organise work experience prior
2. Provide specific explanations of the expectations of the employer whilst on work experience
3. Provide specific explanations for presentation of any employee:
  - a. Be well-groomed
  - b. Sell your skills.
  - c. Dependability.
  - d. Visual Difficulties at work
  - e. Daily tasks
  - f. Sound Sensitivity
  - g. Diplomacy
  - h. Be nice and have good manners.
  - i. Workplace politics

**IN ANY EDUCATIONAL PLACEMENT AND FOR ANY STUDENT, the following apply. In inclusive education, the qualities for success for students are:**

- Sense of self-confidence
- Being engaged
- Sense of belonging

**KEY PHRASES:**

- ❖ **Focus – Building a community into the program** – making relationships within a cohort and with staff means
- ❖ **Individual/student-centred**

**Further:**

- **Considerations in the classroom for students undertaking an altered Curriculum**
- **WorkPlace Preparation**

## **SUCCESS IN ALGEBRA BEGINS WITH TEACHER TRAINING**

Imagine a classroom of students who are actively engaged in algebraic thought. The teacher has confidence in their own algebraic abilities and an understanding of the importance of algebra for students at all levels. While the lessons focus on unraveling a given pattern, students are encouraged to describe the pattern in their own words, and the conversation turns to descriptions of how the pattern is “increasing by 2” or how each new element is “two more than the previous one.” Whether one imagines a first grade classroom or a ninth grade classroom, establishing the type of algebraic environment as described by the NCTM Standards should be a goal for all mathematics educators.

Too often, teachers make comments such as, “I only want to teach kindergarten, so why do I have to know all of this math, especially algebra?” The response to this comment seems obvious. “Would you only want to read at a kindergarten level if you were teaching kindergarten? Then why would you only want to be able to work math problems at a kindergarten level?” Others might comment, “I teach high school, so why should my students need manipulative ‘toys’?” A response to this type of comment might focus on learning to walk before one learns to run. Unfortunately, many preservice and existing teachers are “. . . not comfortable with their own memories of algebra, much less with teaching it to their young students” (Burns, 2002). This lack of confidence teachers have can be explained by their failure to develop a firm foundation of algebra. They have “. . . only a shallow understanding of the concepts behind the rules and procedures, leaving them ill-prepared to promote algebraic reasoning in the early grades” (Stump, Bishop, and Britton, 2003).

The study of algebra is one of the major focuses in the mathematics preparation courses for future K-8 teachers and one of the requirements of current teachers as defined by the NCTM Standards. “By viewing algebra as a strand in the curriculum from pre-kindergarten, teachers can help students build a solid foundation of understanding and experience as a preparation for more-sophisticated work in algebra in the middle grades and high school” (2000). The successful training of mathematics teachers at all levels must focus on developing a more conceptual understanding of algebra through improved teaching strategies, the use of concrete models, and the incorporation of technology.

What exactly is algebraic thinking? Several definitions exist that provide various views about the topic. A combination of multiple views of algebraic thought states that “. . . algebraic thinking includes the ability to analyze and recognize patterns, to represent the quantitative relationships between the patterns, and to generalize these quantitative relationships” (Steele, 2005). Algebraic thinking requires students to be able to work at some of the higher levels of Bloom’s Taxonomy. A student must be able to analyze a given pattern to gain understanding, synthesize the information of the problem to make accurate predictions, and evaluate the pattern for adequate conclusions.

### **Research Focusing on the Teaching and Learning of Algebraic Thought**

Just as “. . . each child learns at his or her own developmental pace, progressing sequentially from the concrete operational level to the abstract level” (Thompson, 1988), prospective and practicing teachers must experience the growth across levels in order to mentally mature their algebraic thoughts. Teachers’ beliefs, knowledge, and confidence greatly affect their ability to guide and support students’ learning. If teachers do not

believe that the development of algebraic thought is important, then their students will not experience the chance to develop this important tool. Also, if teachers lack adequate knowledge and confidence for teaching algebraic thought, they may barely scratch the surface of this topic while creating a weak basis for their students' future experiences to grow. Janet Sharp writes that "Flexibility requires teachers know the mathematics so they can concentrate on figuring out exactly what a student knows or doesn't know. Otherwise, teachers with limited mathematics knowledge have to spend their mental energy trying to remember the mathematics . . . rather than thinking about assessing the student's understanding and framing the next question" (2004). Thus, the maturation of teachers' algebraic thoughts serves a vital role in the success of students in their classrooms.

Teachers need to begin the process of learning algebraic thought at the concrete operational level. Only after a firm foundation has been established at this level, can a teacher progress to the more abstract level of algebraic thought. The best means of gauging a teacher's knowledge of algebra for teaching is through written responses. By having the teachers carefully explain their thought processes in words, university faculty members can assess the level of understanding of algebraic thought of each teacher. Diana Steele writes about a study that uses ". . . writing to access students' schemata knowledge for algebraic thinking." In this study, eight seventh graders participated in a pre-algebra course where the process of solving a problem was stressed. Students were asked to examine problems independently and to write down their reasoning. Students then met in groups to discuss the problems together. Just as "the use of writing and the use of algebraic problems related in mathematical structure . . . help students develop

tools they need to think algebraically,” writing about algebraic problems can also help develop the knowledge base of a teacher. Steele explains that this writing experience allows students to learn how to “. . . communicate their schemata knowledge by explaining and justifying their solutions.” This opportunity develops conceptual knowledge “. . . which cannot be generated by procedures by rote” (2005).

### **Exploring Ideas for Teaching Algebra**

A K-8 teacher must completely understand the mathematical content, as well as, the students who will be taught. “Effective mathematics teaching requires an intimate knowledge of both mathematics and how people learn mathematics” (Sharp and Ohana, 2004). In order to assess the students’ prior knowledge of algebra and understand the thought processes students use in algebra, a teacher must create opportunities for students to verbalize their thoughts as they actively solve algebraic problems. This process also helps a teacher to understand how students learn algebra. “Teachers must focus on student thinking in order to develop their ‘algebra eyes and ears’” (Blanton and Kaput, 2003). These ‘algebra eyes and ears’ lead to additional effective instructional strategies for the teacher who becomes more successful at understanding both the mathematics and the student learning.

After completely understanding the knowledge base of the students, a teacher must create a positive learning environment in the classroom. “When young children are placed in a failure-free, fear-free environment, they enjoy the puzzlelike nature of algebraic problems. Their enthusiasm serves to transform mathematics from a passive to an active subject, thereby increasing student participation” (Femiano, 2003).

Many ideas about the teaching of algebraic thinking exist. One article suggests that “. . . much early work with algebraic reasoning centers around patterns. Children identify and extend patterns, describe patterns in everyday language, and gradually learn to generalize the relationships among elements of patterns in symbolic form” (Stump, Bishop, and Britton, 2003). Success with these patterns produces a firm foundation for students to further develop their algebraic thoughts. Sharp and Ohana comment that “The primary teachers’ eyes lit up when they comprehended the fact that they taught kindergarteners about foundations of algebraic thinking. Although the patterns might look simple on the surface, teachers could recall children describing the patterns in sophisticated ways” (2004). Another teaching experiment, using schema theory and writing in the instruction, “. . . supports both the use of writing and the use of structurally related concrete algebraic problems, especially problems that encourage the use of diagrams to help students develop the tools they need to think algebraically” (Steele, 2005). Marilyn Burns suggests the importance of students being able to organize their own work in mathematics. “When children have to take responsibility for representing their work, they focus on making sense of the problem, not merely on filling in the answers” (2002). In order to develop a teacher’s ability to use these teaching methods effectively, preservice and inservice instructors must model the instructional methods actually used in the K-8 classroom. Repeated modeling of effective teaching methods gives a teacher confidence in teaching and allows a teacher to gain experiences in observing ways to direct student learning in algebraic thinking.

Once a teacher completely understands the knowledge base of the students and has created a positive learning environment where effective teaching strategies are used,

the teacher must be able to assess this new algebraic knowledge. In order to assess the knowledge effectively, a teacher must integrate many opportunities for the students to write about their thought processes in solving an algebraic problem. “Children’s papers are extremely useful for assessing their progress” (Burns, 2002).

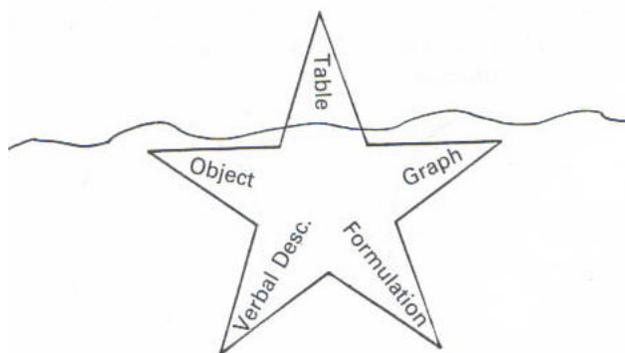
### **Exploring Algebra Using Concrete Manipulatives**

In the past, the mathematics courses for K-8 teachers have taught algebraic concepts using concrete manipulatives, such as rainbow centimeter cubes, to explore various patterns. A modeling approach has a strong influence on students’ algebra learning. Students who learn to accurately model various problems create a tool bag of skills which may be applied to future, related problems. “While the focus for younger students is to represent patterns concretely with various materials, numerically on T-charts, and verbally, older students can also describe the pattern of growth using algebraic symbols” (Burns, 2002). Additionally, students can transfer the information from the given pattern to a graph. Sharp and Ohana comment that “. . . students who explore algebraic ideas in multiple ways, including a variety of concrete representations, as well as, in contextual situations during their elementary learning years, are more able to make connections to symbolic representations in the algebra course” (2004).

“Elementary teachers need their own experiences with a richer and more connected algebra and an understanding of how to build these opportunities for their students” (Blanton and Kaput, 2003). The modeling of mathematics instruction for future teachers can equip these teachers with an effective instructional technique that they will hopefully use in their future classrooms. Typically, the study of algebra in one particular

mathematics course for teachers begins with a lesson that focuses on an investigation of algebraic patterns using five steps. These steps center on the ideas of Janvier's floating star-shaped iceberg (see **fig. 1**), which represents the learning of mathematics and the translations between different modes of representation (1987). The intent of the image is to stress the fact that multiple representations in mathematics exist and often only one representation may seem visible in a given problem. However, if the learner has a strong understanding of all the types of representations, the learner can switch to a different form when needed. In teaching preservice teachers, different representations of the same problem must be stressed. Future teachers need to be fluent in multiple ways to solve problems, so that they may use these varied approaches in their future classrooms.

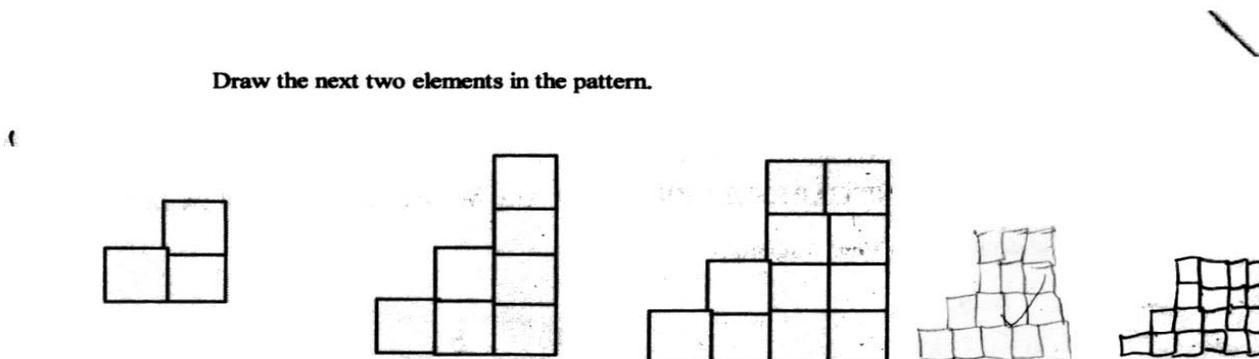
**Figure 1:** Janvier (1987) presents a floating star-shaped iceberg.



One way this objective has been accomplished focuses on a five-step problem centered on a linear relationship. The first step begins with the concrete step. Teachers are presented with a pattern and asked to continue building the pattern with concrete manipulatives. Teachers are also asked to transfer their pattern onto paper. **Figure 2** shows a sample pattern with one student's continuation of the pattern. The second step

follows with a verbal representation of the pattern. Teachers are asked to describe the pattern in detail and then write a word problem that fits the pattern. This step builds mathematical vocabulary, as well as, enhances critical thinking and reading skills. Stump, Bishop, and Britton focus on “Building a vision of algebra for preservice teachers.” In their article, they support this writing task by stating that they “. . . ask preservice teachers to translate these notions into teaching practices by writing questions which are related to the changes occurring with various quantities in their activities” (2003). **Figure 3** provides an example of a verbal description given by a teacher.

**Figure 2:** A student’s drawing of the next two elements in the pattern.



**Figure 3:** A student’s word problem.

**Write a word problem, which fits the pattern.**

I work at Wal-Mart & I'm supposed to stack cans of green beans on the shelf. My first group of green beans consists of 2 cans on the bottom level & one can that sits on top of the can on the right. In my next group of green beans I stack the same display again, except this time I add another column to the right which is a stack of four cans of green beans sitting directly on top of each other, so that this group has a total of 7 cans. I make a third group of green beans next in which I add another column of 4 green beans stacked on top of each other on the right side to make a total of 11 cans. If I continue this process down the aisle, how many green beans will be in the 10<sup>th</sup> group of cans?

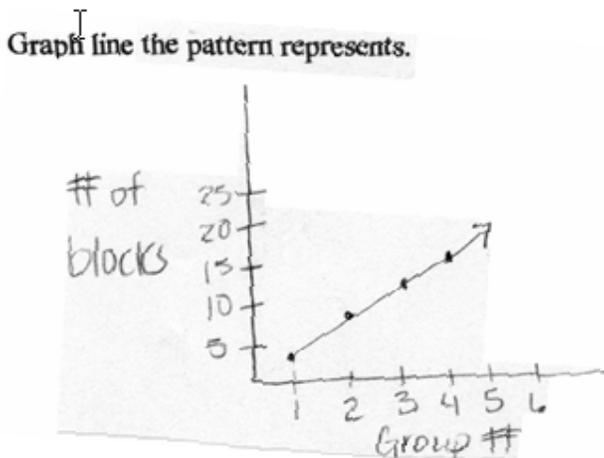
Next, teachers put the data into a T-chart. The independent variable is the pattern number and the dependant variable is the number of cubes in each element (see **fig. 4**). Then, teachers are asked to graph the data from the chart (see **fig. 5**). Finally, teachers are asked to find the linear equation that represents the pattern. Teachers investigate the slope on the graph in the form of rise / run and find the slope in the table in the form of the change from one pattern to the next. For instance, in the table (see **fig. 4** again), teachers note that the change from group 1 to group 2 is four blocks. The change from group 2 to group 3 is four blocks. They quickly note that the change is constant and this change equals the slope. The y-intercept can be seen from the graph. The y-intercept can also be found in the concrete stage in the following manner. Teachers notice how many cubes are being added from one pattern element to the next. Then, going to the first element and taking away the same number of cubes leaves them with the y-intercept. The algebraic equation for this specific example is  $y = 4x - 1$ . Students are often surprised to learn that one problem can be examined in so many different forms.

**Figure 4:** A student's numerical chart and prediction.

**Create a numerical chart showing the pattern and predict the 12<sup>th</sup> element.**

Group #		# of blocks
0		-1
1	+	4
2	+	7
3	+	11
4	+	15
5	+	19
12		47

**Figure 5:** A student's graph.



The study of algebraic thinking continues with a lesson to focus on systems of equations using problems such as a “pig-and-chicken” problem. A sample problem might have stated:

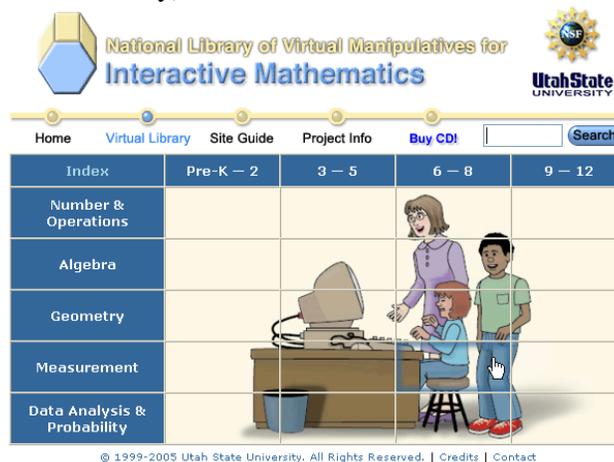
*A farmer owns only two types of animals. They are pigs and chickens. One day, he looks out in his field and counts 10 total animals and 26 total legs. How many of each animal does he have?*

To analyze this problem, students are given spaghetti and rainbow centimeter cubes. Some of them quickly utilize the manipulatives and start to create models of pigs and chickens, using broken spaghetti pieces for the legs. Other students begin a trial and error process on paper as they make guesses to see what the totals might be. Still others begin creating a table of values in search of a pattern. All of these approaches focus on algebraic thinking and allow the students the freedom to lead their own train of thought as they investigate a process for solving the problem. This activity for future teachers models an effective way to allow their future students to develop algebraic thinking for themselves. The activity then extends to include other systems of equations that can be solved using similar techniques.

## Exploring Algebra and Developing Algebraic Thinking Using Technology

Technology plays a vital role in a students' learning of algebraic topics. The use of technology takes away the amount of time that might be spent on developing concepts by allowing multiple problems to be worked in a shorter amount of time. The National Library of Virtual Manipulatives (NLVM) for Interactive Mathematics located at <http://nlvm.usu.edu/en/nav/vlibrary.html> provides an extensive resource of over 75 virtual manipulatives, which were developed at Utah State University through funding from the National Science Foundation. Some teachers may not have adequate supplies of concrete manipulatives available, so this website provides a free alternative when computers with access to the Internet are available (Hodge 2003). The website contains an index of various activities from each of the five content standards as outlined by the National Council of Teachers of Mathematics (NCTM). The virtual manipulatives are broken down into groups by grade level which include PreK-2, 3-5, 6-8 and 9-12. **Figure 6** shows the entry page to the NLVM.

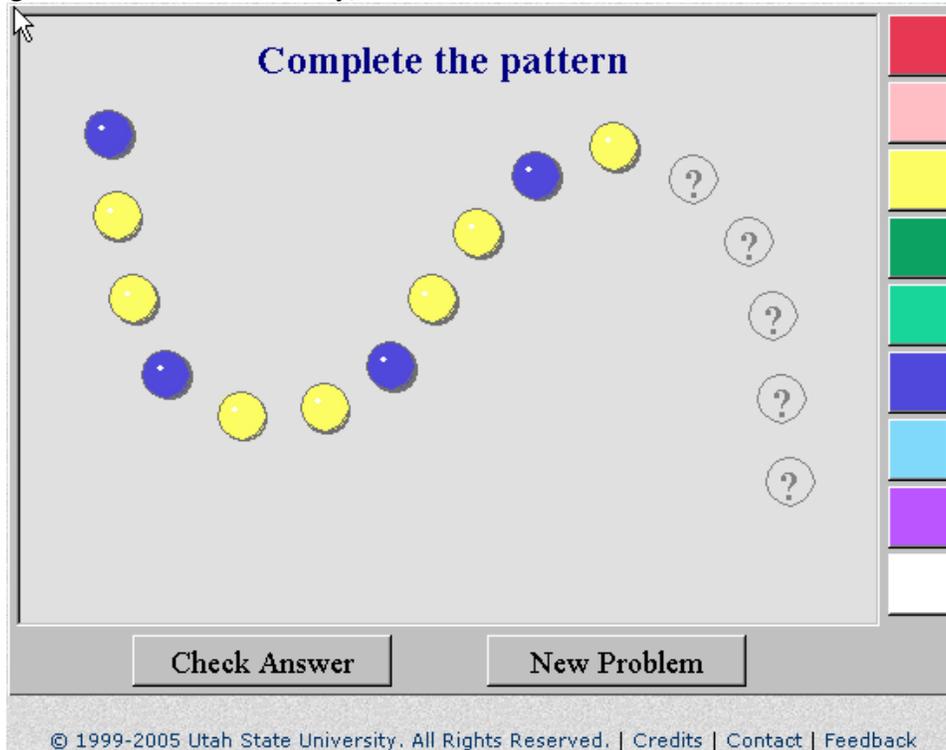
**Figure 6:** The National Library of Virtual Manipulatives at <http://nlvm.usu.edu> (Copyright: Utah State University)



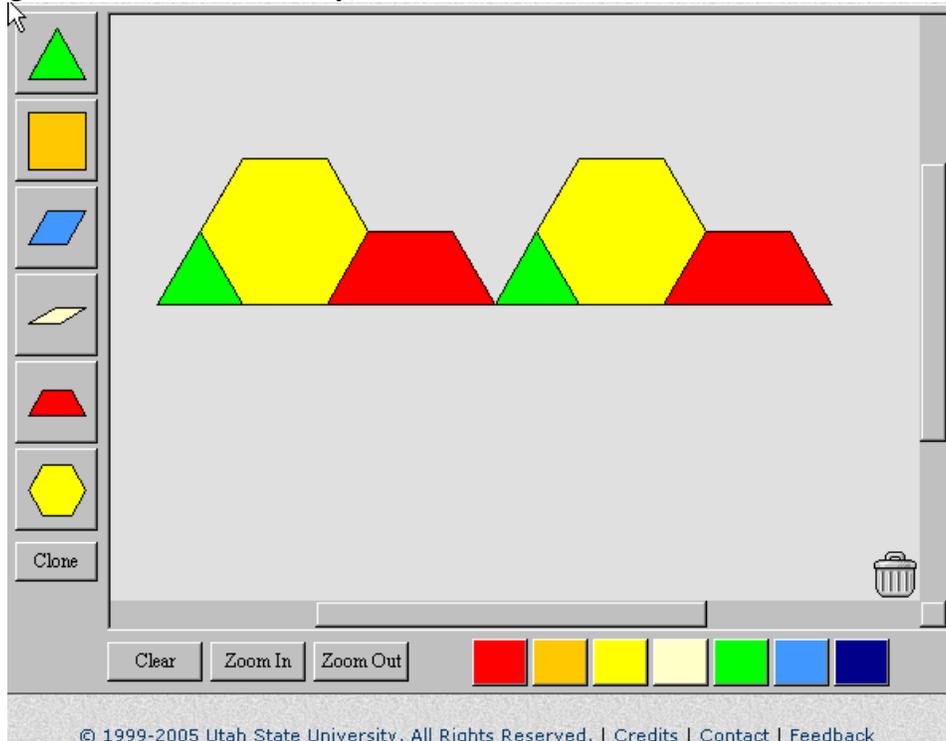
With the continued emphasis on the integration of technology in the classroom, virtual manipulatives can be used to develop and explore algebra. Sharp and Ohana emphasize that “. . . algebraic thinking grows from an understanding of numbers, which includes number sense . . .” (2004).

The NLVM offers many more opportunities which utilize technology to affect and promote a student’s learning and understanding of algebraic topics. At the Pre K-2nd grade level, students can strengthen their understanding of algebraic thinking by exploring color patterns (see **fig. 10**) and by using pattern blocks to build patterns (see **fig. 11**). These same manipulatives can be used at the 3rd-5th grade level in addition to space blocks which can be used to explore surface areas (see **fig. 12**). At the 6th-8th grade level, students can strengthen their ability to shift from the concrete to the abstract by manipulating virtual algebra tiles to multiply polynomials (See **fig. 13**), by using an algebra balance to solve basic linear equations (see **fig. 14**), and by observing the output of a function machine as values are being input (see **fig. 15**). At the 9th-12th grade level, students can strengthen their ability to fully understand algebraic symbols by using the manipulatives mentioned for middle school, as well as, a grapher to explore functions (see **fig. 16**). Thus, the NLVM provide ways for technology to greatly enhance the teaching of algebra.

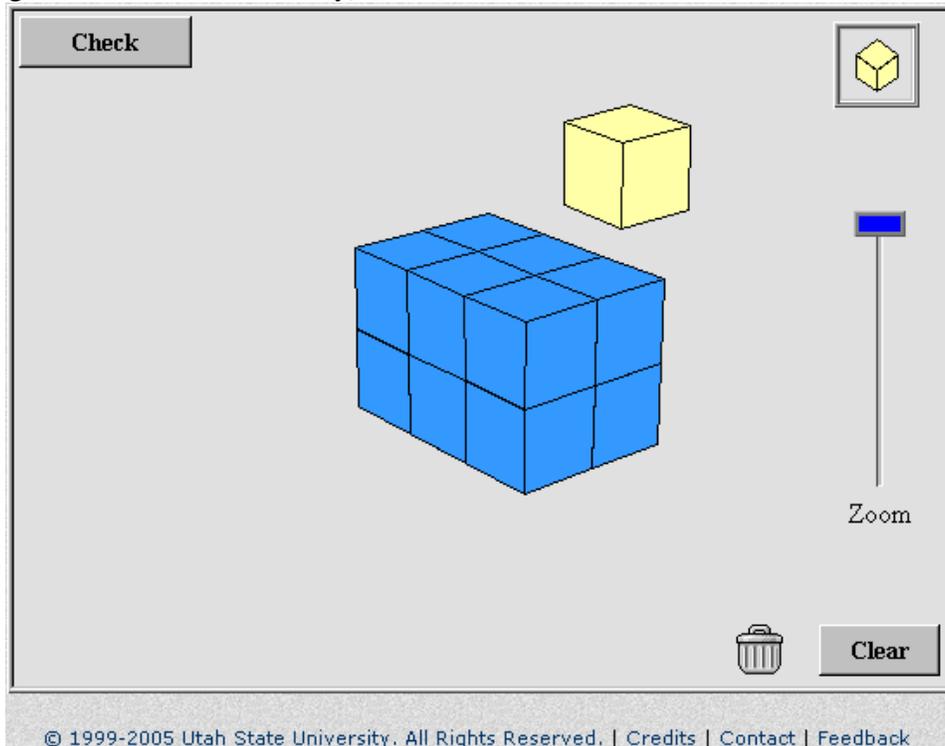
**Figure 10:** The National Library of Virtual Manipulatives at <http://nlvm.usu.edu> (Copyright: Utah State University).



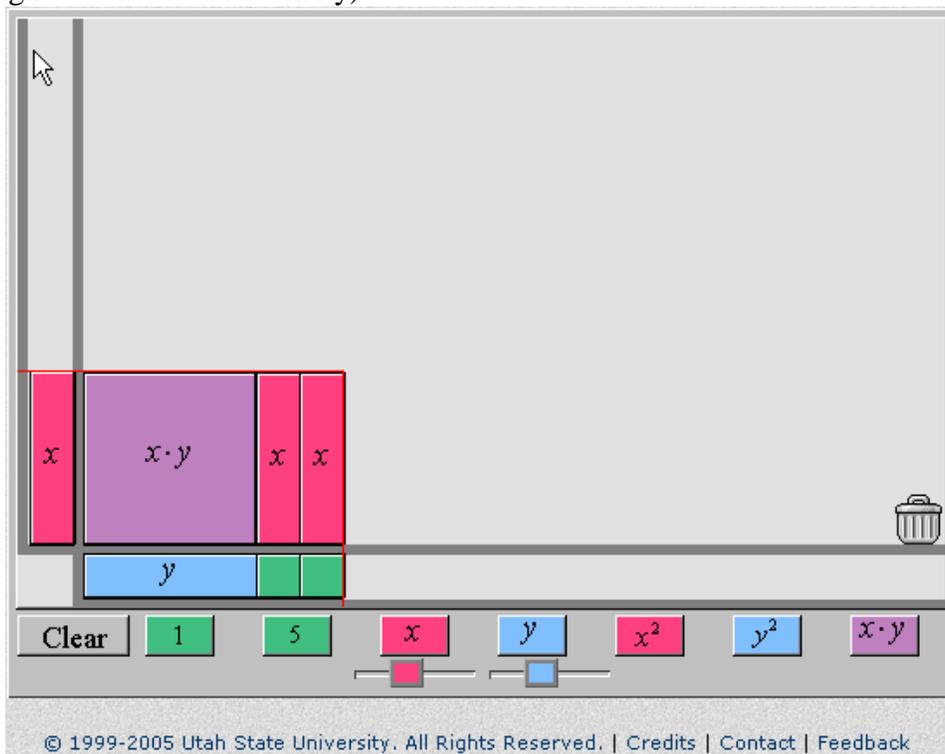
**Figure 11:** The National Library of Virtual Manipulatives at <http://nlvm.usu.edu> (Copyright: Utah State University).



**Figure 12:** The National Library of Virtual Manipulatives at <http://nlvm.usu.edu> (Copyright: Utah State University).



**Figure 13:** The National Library of Virtual Manipulatives at <http://nlvm.usu.edu> (Copyright: Utah State University).



**Figure 14:** The National Library of Virtual Manipulatives at <http://nlvm.usu.edu> (Copyright: Utah State University).

Click and drag quantities from bins to balance beam pans to represent the equation.

$$2x + 1 = 7$$

Continue

Clear Create Problem New Problem

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**Figure 15:** The National Library of Virtual Manipulatives at <http://nlvm.usu.edu> (Copyright: Utah State University).

Drag each number into the function machine and look for a pattern that will allow you to complete the table.

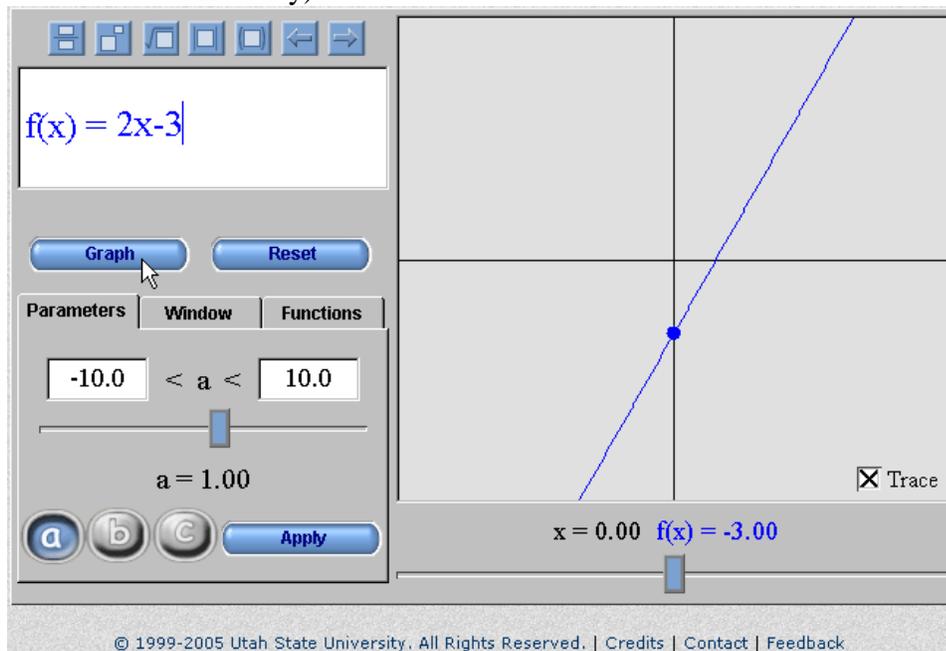
4

In	Out
1	1
2	3
3	6
5	
6	
7	

New Function

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**Figure 16:** The National Library of Virtual Manipulatives at <http://nlvm.usu.edu> (Copyright: Utah State University).



The successful training of K-8 mathematics teachers must focus on developing a more conceptual understanding of algebra through improved teaching strategies, the use of concrete models, and the incorporation of technology. The teaching of algebra is important at all grade levels, and an established need for improved teacher training exists. Several suggestions for improving the confidence and knowledge of teachers have been given. The use of concrete models and the incorporation of technology, especially the NLVM, have proven to be successful methods for teaching preservice teachers. These methods can also be incorporated into successful professional development opportunities for current teachers. Thus, success in algebra at all levels begins with teacher training.

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**REDUCING EXPERIENCED SYMPTOMS AMONG WOMEN AGED 45-60 TOWARD  
MENOPAUSE BY ENFORCING PRE-ELDERLY INTEGRATED SERVICE POST  
(POSYANDU PRA-LANSIA) TO CHANGE NEGATIVE ATTITUDE IN GIRIREJO VILLAGE,  
MAGELANG DISTRICT, INDONESIA**

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**ABSTRACT**

**Health Education**

**Objectives :** (1) To enforce the role of Pre-Elderly Integrated Service Post (Posyandu Pra-Lansia) as the way to solve experienced symptoms because of negative attitude toward menopause in Girirejo Village, Magelang District, Indonesia, (2) To increase of women knowledge about attitude toward menopause and experienced symptoms.

**Methods :** We will enforce POSYANDU PRA-LANSIA with Forum Group Discussion (FGD). Women aged 45-60 will become members in POSYANDU PRA-LANSIA. Many programs will be held to solve about their feeling in menopause symptoms. Sharing and social activity will be main program in POSYANDU PRA-LANSIA. Increasing of self-confident and good body image become the important thing to change negative attitude.

**Discussion :**

Several studies about the health of menopausal women showed that well-being during the climacteric is highly related to a positive attitude towards aging and menopause. Women who had regarded themselves as very attractive and who were satisfied with their physical appearance had the fewest menopausal symptoms. On the other hand, women who didn't regard themselves as attractive and were dissatisfied with their own body showed the largest number menopausal symptoms. Indonesia is developing country with women aged 44-45 who get menopause is 22%, and 45% among women aged 48-49. Many health programs hold in Indonesia. Therefore, programs in well-being during climacteric is uncovered. POSYANDU PRA-LANSIA can solve in climacteric symptoms among women 45-60. We know that Girirejo Village of Magelang District is one of agricultural areas in Indonesia. By enforcing POSYANDU PRA-LANSIA in Girirejo is expected can solve climacteric symptoms. Many activities can be done in POSYANDU PRA-LANSIA for solving climacteric symptoms. We know that negative attitude can affect in symptoms severity. Forum Group Discussion (FGD) which is regularly held in POSYANDU PRA-LANSIA can understand about attitude

toward menopause. Sharing and social activity are the effective ways to enhance self-confident among women toward menopause. Sharing about their feeling during climacteric period can be used to share with similar person who have similar feeling. So that, both of sharing and social activity can enhance their self-confident to face their climacteric problems. Self-assurance, self confident, and good body image contribute with womens's well-being and probably could be considered as protective factors during menopause. Positive attitude is protective factor for reducing symptoms experienced. So, with activities in POSYANDU PRA-LANSIA can affect attitude among women toward menopause and finally can reduce the symptoms severity in climacteric period. Quality of life among women toward menopause can increase with this program.

**A. Title of Submission**

Facilitating perspective-taking in writing through case studies and virtual world role-play

**B. Topic Area of Submission**

Curriculum, Research and Development

**C. Presentation Format**

Paper Session

**D. Description**

This paper is based on an exploratory study involving a multifaceted curricular intervention to help enhance high school students' capacity for perspective-taking in their written assignments on disability issues. The curricular intervention encompassing case studies and virtual world role-play is described. The paper presents an analytical example from a collective case study examining emergent patterns of perspective-taking in student participants' written work. Findings will be used to develop an analytical framework on perspective-taking to inform curriculum design. (77 words)

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## **Abstract**

This paper is based on an exploratory study involving a multifaceted curricular intervention to help enhance high school students' capacity for perspective-taking in their written assignments on disability issues. Drawing on findings from experimental studies examining variables correlated with participants taking on the perspectives of out-groups, this study extended these findings by examining the factors affecting the mechanisms of perspective-taking in a dynamic classroom setting. The research involved a curricular intervention encompassing (i) direct instruction on critical literacy to facilitate analysis of differing representations of the people with disabilities in the media, (ii) individual student case study analysis of a written text or a video on a specific type of disability produced by a person with that disability, and (iii) three iterations of role-playing by student groups in a three-dimensional virtual world in which one member took on an avatar with a disability and had to decide how to respond to the prejudiced treatment or moral support of the able-bodied avatars. This paper describes the curricular intervention and presents one analytical example from a collective case study illustrating the mechanisms of perspective-taking enacted in student participants' written work. It represents the first step towards developing an analytical framework on perspective-taking to inform future curricular interventions aiming to initiate a shift in the perspective taken by students.

## **Stop the Bleeding: Rebuilding Master Level Enrollments**

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Graduate education at many public comprehensive universities face enrollment challenges. Some external forces such as the global economic crisis and shrinking support for public education are beyond one's control. Other factors such as support by your university's upper administration can help mitigate plummeting enrollment numbers. While recovery has not been immediate, the tide is beginning to turn. Actions taken include development and implementation of a strategic plan, hiring of a Graduate Dean while maintaining the Director of Graduate Studies position, development and implementation of a marketing plan, redesigning and optimizing websites, engaging in data digging, and more. Hear one university's story and share your experiences. Today in higher education everyone must be a marketer.

## **1. Designing Weighted Rubrics**

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6. When used to their fullest, rubrics serve as both the teaching tool and the assessment tool. By presenting the task and criteria at the start, students are introduced to backwards planning: identifying the desired end results, the form of evidence that will be examined, and key components/rules of the evidence. By benchmarking descriptors for levels of performance, teachers and students can use the rubric to chart growth over time. Participants will receive compelling justification for the use of rubrics in their instruction, the steps to follow in designing a “balanced” rubric, and examples of rubrics used in narrative and expository writing. The rubric format is easily adapted to science, math, and social studies projects. Designing a weighted rubric is an effective way to use existing materials and resources to meet the Common Core Standards.



# **Literature Supporting Investigations of the Nexus of Mathematics, Strategy, and Technology in Children’s Interactions with iPad-Based Virtual Manipulatives**

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## *Abstract*

*Multi-touch devices are becoming popular technology tools for use in mathematics education. Researchers have identified affordances of virtual manipulatives and have created cognitive design principles for mathematics apps. Emerging studies report some empirical evidence of connections between specific mathematics apps and student performance in mathematics. However, there are gaps in the current research, including a lack of in-depth analyses of children’s interactions and strategies related to specific mathematics apps. Thus, the authors recommend a detailed examination of the nexus of mathematics, strategy, and technology in children’s interactions with a virtual manipulative app for the iPad.*

Schools are increasingly using Apple iPads and other multi-touch devices to facilitate mathematics instruction. Despite the widespread adoption, there is scant published research regarding sound mathematics app design principles or connections between student performance in mathematics and interactions with specific iPad apps. Little current literature provides in-depth analyses of children’s interactions and strategies related to specific iPad apps. The purpose

of this paper is to lay the foundations for an examination of the nexus of mathematics, strategy, and technology in children's interactions with a virtual manipulative app for the iPad. In the following sections, we examine literature that has implications for mathematics app design and literature that reports empirical results connecting specific mathematics apps and student performance in mathematics before making recommendations for future research.

### **Implications for App Design**

#### **Studies Focusing on Virtual Manipulatives and Apps**

An increasing number of publications have implications for the design of virtual manipulatives mathematics apps for the iPad. Mathematics apps are often collections of related virtual manipulatives (see also Moyer-Packenham et al., 2014) which are “an interactive... visual representation of a dynamic object that presents opportunities for constructing mathematical knowledge” (Moyer, Bolyard, & Spikell, 2002, p. 373). In a recent meta-analysis, Moyer-Packenham and Westenskow (2012, 2013) concluded that virtual manipulatives (VM) have five affordances that promote student learning:

*focused constraint* (i.e., VMs focus and constrain student attention on mathematical objects and processes), *creative variation* (i.e., VMs encourage creativity and increase the variety of students' solutions), *simultaneous linking* (i.e., VMs simultaneously link representations with each other and with students' actions), *efficient precision* (i.e., VMs contain precise representations allowing accurate and efficient use), and *motivation* (i.e., VMs motivate students to persist at mathematical tasks). (2012, p. 2)

These interrelated affordances produced positive moderate effects (0.35) when virtual manipulatives were compared to other instructional factors.

Other studies emphasize the importance of feedback in computer- and iPad-based virtual manipulatives. For example, Paek and colleagues (Paek, Hoffman, & Black, 2013; Paek, Hoffman, Saravanos, Kim, & Black, 2012; Paek, Hoffman, Saravanos, Black, & Kinzer, 2011; Paek, 2012) noted that the combination of visual and auditory feedback when using a virtual manipulative helped improve students' performance on multiplication tasks, whether the virtual manipulatives are based on iPads or computers. Bartoschek, Schwering, Li, & Munzer (2013) piloted an iPad app designed to improve spatial awareness, concluding that young students approved of audio feedback but desired more specific responses to their mistakes. Blair (2013) categorized feedback types found in iPad mathematics apps as Answer Until Correct, Corrective Feedback, and Implication Feedback, which she planned to examine in a study comparing how preschool students respond to these feedback types. These studies link affordances and feedback in virtual manipulatives and iPad mathematics apps with student performance and preferences.

### **Studies Focusing on Design and Evaluation of Mathematics Technology**

Other authors have noted design and evaluation principles or features of mathematics technology. Ginsburg, Jamalain, and Creighan (2013) created a list of six cognitive design principles to take advantage of technology affordances. They recommend that designers should

- a) engage children in cognitively and mathematically appropriate activities, b) develop effective models for representing abstract ideas, c) encourage accurate and efficient strategies, d) identify and eliminate bugs and other misconceptions, e) design appropriate physical interactions, and f) integrate narratives and stories with mathematical concepts.

(p. 85)

Encompassing parts of both VM affordances (Moyer-Packenham & Westenskow, 2012, 2013) and cognitive design principles (Ginsburg et al., 2013), Sedig and Liang (2006) offered a

framework for evaluating interactivity factors affecting learning and cognitive processes of those using mathematics technology. The twelve factors were affordances, cognitive offloading, constraints, distance, epistemic appropriateness, feedback, flexibility, flow, focus, involvement, scaffolding, and transition. Sedig and Sumner (2006) refined the human-technology interactions into three basic interactions and twelve task-based interactions. Adesina, Stone, Batmaz, and Jones (2013) also noted that apps have the potential to track students' solution strategies and interactions, allowing for a deeper analysis of their thinking. Combined with affordances of virtual manipulatives, these complementary frameworks not only inform app design and evaluation, but may also influence interpretation of children's interactions with virtual manipulative apps.

### **iPad Apps and Mathematics Achievement**

Few studies report empirical connections between specific iPad apps and mathematics achievement.

#### **Single Studies of Specific Apps**

Two notable studies reported promising empirical results. Barendregt, Lindstrom, Rietz-Leppänen, Holgersson, and Otteson (2012) reported data from an investigation including 11 5- and 6-year old children playing Fingu, an iPad app focusing on finger gnosis and subitizing skills. Their preliminary results suggested that students gained precision with practice and developed different strategies as they played. The authors designed Fingu to provide back-end data, including finger placement and time-to-completion data to supplement the performance data. Their full study will include achievement and affective measurements examined through performance data and video coding. The combination of comprehensive data collection and analysis might lead to results with implications for future studies' content and design.

Riconscente's (2012) white paper reported results of a study involving 122 fifth grade students' interactions with a fraction-focused iPad app called Motion Math. The author concluded that students made statistically significant growth in achievement on fractions on number lines tasks. Riconscente also found that the positive affect extended beyond the iPad itself. Students in her study overwhelmingly gave high ratings to a game-based fraction app and showed increases in self-efficacy and liking of fractions after playing. These results indicate that iPad apps have the potential to positively affect students' achievement and attitudes.

### **Multiple Studies of a Specific App**

In a series of related studies, Paek and colleagues (Paek et al., 2013, 2012, 2011; Paek, 2012) examined how combinations of feedback and input modalities while using virtual manipulatives affected students' performance on multiplication tasks. Students used a researcher-designed app on the iPad (touch interaction) or computer (mouse interaction) and received audio and/or visual feedback. In the most comprehensive of the studies (Paek, 2012), statistically significant differences for far-transfer tests included those in the Audio + Visual feedback group outperforming the Visual-only group and Touch interaction groups outperforming Mouse interaction groups. Statistically significant differences for near-transfer tests included Touch interaction groups outperforming the Mouse interaction groups. The author concluded that audio information had more of a short-term impact while the degree of embodiment was a greater factor in the long-term results. Research suggests that specific mathematics apps may improve students' mathematics achievement, but little current research detailed fine-grained analyses of students' interactions with specific mathematics apps.

### **Recommendations for Research**

As research on students' interactions with tablets expands, researchers should acknowledge that mathematics iPad apps are often collections of virtual manipulatives. Although studies are beginning to provide data linking students' use of specific iPad apps and their achievement in mathematics, there was less evidence of fine-grained analyses of students' interactions with specific mathematics apps on iPads. Such research could consider the prior frameworks and affordances while exploring what the interactions reveal about students' mathematical understanding and sense-making strategies. Current research by the Virtual Manipulatives Research Group at Utah State University aims to address these and other gaps in our understanding of children's mathematics learning and interactions with iPad apps.

### **Summary**

This paper examined literature with important implications for mathematics app design and literature that reported empirical results connecting specific mathematics apps with students' mathematics performance. Additionally, we made recommendations for research, including the connection of iPad apps with virtual manipulatives. We hope this paper provides a spur for research, including explorations of the nexus of mathematics, strategy, and technology in children's interactions with virtual manipulative apps on the iPad.

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Abstract for Proceedings – Submission #1499

Title: Transforming Math Education in Developmental Classes

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Abstract (Work in Progress):

Black Hills State University, like so many other institutions, has struggled with the problem of students failing Basic Algebra and Intermediate Algebra. Many of these students subsequently failed to graduate. To address this issue, the mathematics department transformed the way these courses were offered. In this presentation, we will give a brief historical overview of this transformation, its impact on student success, and how it led to receiving a National Science Foundation TUES (Transforming Undergraduate Education in Science) grant. The focus of the grant is to study the predictability of student attributes and instructional variables on student success in remedial math courses and their subsequent pathway to graduation. The transformation of these courses involved both structural and instructional changes. The structural changes included allowing students to repeat one of the three units of content and still finish by the end of the semester. The instructional changes included focusing on student learning, student engagement, the use of explicit instruction, and evidence based procedures. The initial results from these changes have motivated us to develop a multi-tiered system of support to identify and assist at-risk students. This presentation will conclude with discussion on how these students performed in their subsequent college level classes.

Supported by NSF Grant #1141334: The Predictability of Student Attributes and Instructional Milieu on Success in Developmental Math Courses, College Algebra, the CAAP exam, and Matriculation to Degree

## HICE Proceedings Submission

1. **Title of the Submission:** Common Core – Uncommon School: Teaching and Learning in the Walton Rural Life Charter School in Walton, Kansas (Population 235)
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6. **Abstract:** In 2007, Walton Elementary was the smallest school in the Newton Public Schools, Unified School District 373, Newton, Kansas. Concerns arose regarding whether it was even feasible for the school to remain open. Around this same time, charter grant money was made available through the Kansas State Department of Education. With the unanimous approval of the board, then Superintendent Dr. John Morton led an effort to submit a charter application converting Walton to the Walton 21<sup>st</sup> Century Rural Life Center. The charter was approved, and the rest is history! Walton has succeeded beyond even the most optimistic vision of most of those involved with the project. Dr. Morton, now an Associate Professor in the School Leadership/MSTE Department at Emporia State University located in Emporia, Kansas, will discuss Walton’s success as a project based learning charter elementary school, complete with its own teaching barn, greenhouse and wind turbine! This school could be a model for every struggling rural community, not only in Kansas, but throughout the world!
7. **Full Paper: Common Core – Uncommon School: Teaching and Learning in the Walton Rural Life Charter School in Walton, KS**

By  
Dr. John R. Morton, Associate Professor  
Emporia State University  
Emporia, Kansas

“Give the pupils something to do, not something to learn; and the doing is of such a nature as to demand thinking; learning naturally results.”

— [John Dewey](#)

John Dewey’s quintessential quote perhaps sets the stage for the premise of this paper better than any other source. His “learn by doing” approach to education has been in and out of vogue since

the 1930s. Yet now, with the advent of a more common sense, common core standards approach to teaching and learning, the pendulum may be swinging back, as evidenced by what has occurred since a small, rural, low-enrollment elementary school in Kansas shifted both its philosophy and focus as part of its move to a nationally recognized charter school.

Walton's roots can be traced by to its origin as a K-12 rural school which began its work in 1934 and served as a hub of activity for the small, rural Kansas town of the same name. Over time, the town became smaller, the school struggled to retain enrollment, and it eventually became part of the Newton Unified School District 373 as an elementary school. However, enrollment issues persisted, leading to increasing concerns regarding its future. Ironically, during this same time, school districts were being urged to write for charter school funding to promote innovative and out-of-the-box schools throughout the state.

As a superintendent, the prospect of transforming Walton into a charter school, with dollars available to support change, was an appealing one to me. As I considered various themes for the school, an obvious one came to mind; Walton was in the middle of a rural, predominantly agricultural area of Harvey County, Kansas. It seemed logical to create a "rural life center" around that theme. So, in 2007, with the assistance of the district's very capable grant writer at the time, Barbara Burns, and with the unanimous approval of the USD 373 Board of Education, a charter application was submitted to the Kansas State Department of Education. The application also had the unqualified support of the school's principal, Natise Vogt, and all of the staff working in the school.

We had begun to plan anticipating a three year implementation timeline. Imagine our surprise when, because of changes in the charter implementation policies at the federal and state levels, we had to telescope the first two years into one, combining staff training with implementation and building an addition to the school at the same time. It was, needless to say, a whirlwind of activity! And, yet, it was an energizing adventure for all of us in the school district.

Walton not only survived the accelerated timetable, it began to thrive. Teachers focused on the agricultural theme, and instituted project-based learning as a primary method of teaching and learning in the building. We were able to utilize the newly constructed greenhouse, powered by a wind turbine secured by a grant, as a teaching and learning laboratory. I will never forget visiting a classroom in the building where students and teachers had just discovered aphids in the greenhouse. The teachers, Kathy Murphy and Derrick Richling, used a document camera to show the insects to the students, they researched methods of dealing with them by utilizing the Internet, and formulated a plan to save the plants in the greenhouse. If anything epitomized "learning by doing," this example certainly did.

In addition, farm families adopted each classroom, allowing students to follow the agricultural cycle through visits to individual farms throughout the year. They began to produce items that could be sold via a local farmers' market. They made their own salsa. They attended agriculture camp in the summer to extend their learning. And, more importantly, we saw gains in learning from students that were unprecedented, especially from students with special learning needs.

With additional funding, we were able to construct a teaching barn so that farm animals could both be housed on site and brought in for student learning activities. An informal school mascot, Petey, the goat, led the students and staff in their daily walking activity around the school property.

Chickens, and the eggs they produced, were also added to the overall learning environment. An initial experience with chickens also afforded students and staff an additional learning opportunity. Once the coop was built and the fencing was put in place, the chickens were installed in their new home prior to the weekend. When the students returned to school on Monday, not a chicken was to be found. Enterprising foxes had dug under the fencing and had decimated the flock. Not to be deterred, teachers, staff and parents used the event as a teaching moment to stress the need for a barrier to be constructed beneath the fence which would keep animals from availing themselves of the opportunity to select chickens for their next meal. Teachers now use the eggs collected by students as part of a science learning activity and the sale of eggs as an exercise in math application while also serving as a mini-fund raiser for the school.

As with any school, Walton remains a work in progress. The principal, through the school's charter status, has allowed her very creative teachers to exercise creativity and flexibility in their approach to teaching and learning, still keeping the end in mind – the standards students are expected to master at each grade level. Kansas State Department of Education data for the 2011-2012 school year provides the following statistics for the school: 92.6% of the students perform at or above the standard in reading; 100% of the students perform at or above the standard in science, and 100% of the students perform at or above the standard in mathematics. (KSDE Online Report Card at [www.ksde.org](http://www.ksde.org)) In addition, the school has received multiple recognitions for both its overall program and academic achievement, including receiving the Governor's Award and being named a finalist in the Intel Corporation Schools of Distinction in 2011. (Intel)

All of these successes have been occurring at Walton over the past five years first in the context of a national effort orchestrated by the federal government through No Child Left Behind and now in the transitioning to the common core standards initiative which has been adopted by the majority of the states, including Kansas. Walton, however, has been ahead of the curve as usual. The school could serve as a prime example of what the common core is working to instill in all schools in the country.

“The Common Core State Standards focus on core conceptual understandings and procedures starting in the early grades, thus enabling teachers to take the time needed to teach core concepts and procedures well – and to give students the opportunity to master them.” (Common Core Standards Initiative) The expectation is that the Common Core will provide a “real-world approach to learning and teaching.” (Core Standards State of Washington) Such an approach focuses on application of knowledge, consistent learning expectations, clear standards focused on understanding and critical thinking and a more meaningful assessment process (CCSS State of Washington). And, as John Young states in his commentary regarding the standards in The Denver Post, “Education isn't just about plugging individuals into the workforce. It's about exciting them about the possibilities of the mind.”

I would contend that Walton teachers and their students not only extend the “possibilities of the mind,” but could serve as a demonstration school for successful implementation of the common core standards. With the school’s focus on problem solving and critical thinking through a project based infrastructure, Walton students are among some of the best prepared students in the district to succeed in mastering the common core standards which will prepare them for continued success in “college, work and life.” (CCSS State of Washington) For example, the second graders have their chicken project. In English/Language Arts (ELA), they are to read three stories and compare/contrast. They use stories about chickens (ex- “The Little Red Hen”). They can compare and contrast with those stories. They sell the eggs and use math money skills in making change and counting their money.

For students to be successful as they confront the challenges of the 21 century, a different skill set will be needed, which is why I am at least cautiously optimistic that the common core standards initiative may at least put us on the right track. As it stands now, it would appear that the students at the WRLC (Walton Rural Life Center) may well have a leg up when it comes to acquiring the right skills, utilizing the agriculture themed approach to learning that has allowed them to become critical thinkers and problem solvers. For example, Walton fourth grade students were given the problem of watering the school’s garden. They worked in groups to design a watering system. They had to measure for PVC pipe, estimate lengths, prices and then construct the irrigation system. They also worked on area and circumference.

Originally, one of the goals of the charter school movement was to create innovative schools whose efforts could be replicated across the country. While the Walton program might not succeed as well in Washington, D. C. or in Los Angeles, it might well be a model for a multitude of small, rural schools in rural communities throughout the country, preparing students to compete in a global economy with skills that can transfer to innumerable situations. And, the project based problem solving approach to teaching and learning has universal implications.

The individual teachers look at the common core standards and match classroom projects to the standards. Then when students have an interest in individual projects, the teachers can find ways to match the projects with the standards. To quote Walton Rural Life Center Principal, Natise Vogt, “Project Based Learning is fun and engaging for students. Students learn better when they are engaged. The real-life examples throughout the article demonstrate why and how they learn the common core by constantly applying the standards to actual situations.”

It has been one of the highlights of my professional career in education to watch the transformation that has occurred at the Walton Rural Life Center, knowing that the risks we took in submitting the initial application have paid off in outstanding, relevant learning opportunities for ALL students, allowing Walton to remain a viable institution of twenty-first century learning instead of becoming another shuttered building.

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**TITLE****Middle School Teachers' Perception on Instructional Adaptation and Cooperative Teaching for Inclusive Education**

Topic Areas: Special education

Presentation Format: Poster session

**ABSTRACT**

The purpose of this study is to investigate how the instructional adaptation and cooperative teaching with special education teachers for their students with disabilities in the inclusive settings. For this study, the survey was developed and distributed 55 general middle schools, total of 440 middle school teachers. To analyze the collected questionnaires, Kruskal-wallis one way ANOVA by rank based and Kai square ( $\chi^2$ ) were used. In this study result and implication were discussed.

Keywords: Special education, Inclusive education, Instructional adaptation, Cooperative teaching

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The development of Early Childhood Teacher Resilience Scale

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**6. Abstract:** attached in the following page

## **The development of Early Childhood Teacher Resilience Scale**

This study aims at developing a rating scale assessing resilience in early childhood teachers who are working with 3 to 5 year-old children. Resilience in early childhood teachers means the ability to dedicate themselves to their professional work as teachers despite of personal and environmental difficulties and adversities. To develop an instrument which takes into account various factors of resilience in early childhood teachers is essential to provide effective and customized support for teachers and their education, because resilience in early childhood teachers should be recognized as the one distinct from resilience in adults in general or in other professions, when considering unique situational, organizational, and professional features of their work.

As initial steps, 76 items were developed through extensive literature review, four focus group interviews (consisting of early childhood teachers with various educational levels and teaching experiences), and three specialist conferences (consisting of professors, researchers, and grammarian). Then, through a pilot study and data collection of over 500 early childhood teachers, the final items for assessing resilience in early childhood teachers were settled based on the item analysis results (Andrich's Rating Scale Model and infit-outfit MNSQ) and the empirical verification of validity (content, criterion-related, and construct) and reliability (test-retest and Cronbach alpha). Through these processes, the Early Childhood Teacher Resilience Scale (ECTRS) is proved to be a valid and reliable measure to assess the resilience in early childhood teachers who are working with young children.

1. Title of the submission.	<b>Contemporary Methods of Music Education in Primary School</b>
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6. Abstract and/or full paper.	

### **Abstract**

Article acquaints kindergarten teachers and primary school teachers about ideas of daily contemporary music lessons in the classroom. Contemporary music ideas are extremely varied from culture to culture. But all music has the same roots deep in human's basic daily activities. We know different methods and theories of teaching contemporary music, e.g. Edgar Willems and NAFME. Teacher's task is to be aware that he has THE power to choose the most effective teaching method for her students.

### **Keywords**

Teacher, student, contemporary music education, Edgar Willems, NAFME, primary school music education around the World.

What does contemporary mean? The dictionary of Slovenian language defines it as something that relates to the present or to the most recent norms. The meaning of contemporaneity in music differs a lot. For Slovenian primary school education, contemporaneity means to use mathematical elements during the music lessons, in the United States it means to have air-conditioned classrooms, in Africa this term means that music lessons are taught in their mother tongue and in Lebanon contemporaneity would be, if music lessons were introduced to schools at all.

I have started inside of my and your body and asked myself, what music does inside of us. I took a walk to the nearby primary school and observed what pupils do during their music lesson. I started to wonder who should teach music lessons in the first cycle of primary education – the homeroom teacher or a music pedagogue. As you know, the first often says he/she enjoys teaching all subjects but not music. Music is not her line. I rose above Slovenia and took a look at the structure of the Slovenian curriculum of music education. With one foot

I already stood in Belgium, where Edgar Willems's method comes from, which is used in some Slovenian schools instead of the national curriculum. Afterwards I flew over to the United States, where The National Association for Music Education (**NAfME**), one of the most advanced music education associations, is stationed. How about Africa, are they allowed to be contemporary? And the Arab world? How about China, Hong Kong, Taiwan? What does contemporaneity mean to them?

### **Music for children**

All kinds of music have deep roots in everyday activities of human life (Blacking 1976). Music has creative and spiritual dimensions, which are sometimes expressive; they are created by pupils' playing and sometimes they become visible at dancing. Therefore it is expected that music represents an aesthetic value of children, like their work of arts. When pupils are involved into music activities in the classroom, it is expected that the music will sound like "their" music – it is similar to children's art.

The nature of music education is the active way of learning, also with reference to the teaching of music theory. For a deep music experience we should make a move into our body and soul, into creativity. An example of learning language: the most effective way of learning a foreign language is to visit the foreign country for a longer period of time. A similar principle applies to the music theory. The passive learning style – sitting and talking – is not enough. Researches have shown that the active learning approach can help to preserve up to 80 % of the new learning material. The effectiveness of active learning is confirmed by a music teacher in a kindergarten, who often teaches children in the presence of their parents. The parents who sat in the background of the classroom were amazed at how their children were able to remember more than they could. They were explained that their children were actively included into an in-depth activity, whereas they passively sat and listened (Glover 2004). "Passivity in making music excludes emotional and mental collaboration."

(<http://www.funmusicco.com/musicteachersblog/2008/11/teaching-music-to-children/>,  
7<sup>th</sup> August 2013).

### **Who is more effective at teaching music in the first cycle of primary education – a homeroom teacher or a music pedagogue?**

The Slovenian curriculum for the first cycle of primary education prescribes that a homeroom teacher teaches all subjects. That assures a holistic view on the pupils' development. In the past, there were some theories about early music education – it was described to be

“different” and that it cannot be taught the same way as the other subjects and therefore it should be taken over by the music pedagogues.

Music education needs to be assured to an individual. This means:

- Each pupil develops skills, understands and is able to use music independently.
- Music lessons need to meet the capabilities and needs of each pupil.
- The teacher controls the personal development of each pupil in the field of music.

Only the homeroom teacher is in position to organize time, space and the necessary instruments that are close enough to the knowledge of pupils. The outcome is teaching with maximum effect.

The question of who should teach music provides different answers. If pupils are given lessons only by a music pedagogue, there are numerous disadvantages.

Below are described two important arguments regarding taking responsibility for music education in favour of a homeroom teacher:

- The effectiveness of music education often depends on the way in which it is organized. If all the school teachers are taking part in musical activities and if they teach music as well as all other subjects, they bear a message that music is accessible to all and a value for everyone. Where teaching music is limited to one music pedagogue for all pupils in school, or even worse, when the music education is provided by an outside school teacher, there is no wonder that pupils start to think that only certain people can make music or that music education needs to be provided by someone special. This assumption is transferred from childhood to adulthood and is still present in many primary school teachers who have a lack of confidence about their own abilities to teach music. They are still marked by the teaching model of their youth.
- The second argument bases on the music concept, which requires interdisciplinary integration. Music is in many ways a wonderful complement to the various views of human experience. This can be observed on a personal level, since music combines intellectual, physical, emotional and social dimensions of an energetic and historical significance, such as the extensive fields of understanding and action. Within the school organization, music education has an almost unique position regarding the integration of various fields, since it is in its nature to have common characteristics with other fields. The music teachers, who wish to fully explore and use this, have to manage the whole curriculum. The discussion of music topics alone is not enough. It

is much more effective if the music education includes other elements of the curriculum, such as mathematics, science, social studies, language, sports, etc.

In a recent musical debate, the participants were discussing about who should provide music education: a “specialist – music pedagogue” or a “homeroom teacher”. The idea of dividing teachers into specialists and non-specialists (homeroom teachers) raises negative perceptions and can lead to the misunderstanding of the role of a homeroom teacher. Indeed many homeroom teachers have different musical skills, such as instrumental, vocal, dance, composing music or art knowledge and technical skills. School can make them available, if the teacher is willing to teach and share his knowledge.

The question, whether all homeroom teachers have skills to teach music, sometimes raises in teachers themselves, who feel inadequately educated both, in the field of music and didactics. The question frequently bothers teachers who have a past experience about the importance of having a music specialization, which cannot be reached by everyone. However, the extensive researches on teachers, teaching all subjects, and music pedagogues, teaching only music in primary school, show that great music skills are not essential for the proper realization of the curriculum (Glover 2004).

The thesis, who should teach music, is additionally supported: there are alternatives leading to the same goal. The school teacher expertise may be applied in various ways. The findings of the English music inspection OFSTED show: “There is no evidence of common links between a “specialist’s knowledge” and the quality of music education, taught in the elementary school. Some specialists teach very effectively, others do not” (Mills 2009).

We have to be aware of the fact that having a teacher with special skills can in the worst case lead to the teaching based too much on the teacher's, rather than the pupils’ musical abilities. This can sometimes have a negative effect on the pupils’ development. Each pupil has some musical skills, which he brings to the music lessons. Everyone is somewhere in the music map (Woodward 1986). Nevertheless, it is important to ask the homeroom teacher, where he feels a lack of skills to ensure a rich and stimulating music education.

Below are given some general concise music skills and the duties of an average teacher, who professionally executes the curriculum in the first cycle of primary school:

- To be clearly attentive listener, sensitive to sound and its quality.
- To use musical language and vocabulary confidently in accordance with the pupils’ level.
- To provide thoughtful proposals, enthusiasm and wide range of ideas, including pupils’ ideas.

- To explore with a wide range of skills.
- To plan and provide the learning process of each pupil to achieve at least the minimum standards of the curriculum.
- To assess pupils' progress.

The tendency of defining musicality lies in specific teaching skills of solo singing, playing instruments or reading music literature. Of course, these capabilities are teachers' advantages; however, the success of a teacher is defined by a wide range of skills, including those that are not directly linked to music. An important aspect of teaching musicality in the classroom is teacher's susceptibility to music as a listener. A pupil should be able to experience the teacher's spontaneous response to music, the emotional effect of the arts and to see that music is accessible to everyone. Music is experienced in various individual ways. When listening to music, feelings sometimes inflame our hearts. For some pupils it may be difficult to listen to music without dancing along, jumping, swinging in its rhythm or do some physical activities. Music helps some pupils to calm down and concentrate. The understanding of music depends on our mood, taste of music, company, etc. Music "hits" our feelings in different ways.

Many adults define themselves as unmusical. A partial reason may be their sharp criterion, which includes the technical ability to play instruments, such as playing the piano. Some of them have negative experience from their early school years, if they were rejected by the school choir. It is important that the teacher does not make a negative music impression on children. What is more, the teacher should provide an atmosphere of understanding music elements and effective learning of music basics (Glover 2004).

### **The Slovenian curriculum for music education**

Music is an art that combines numerous concepts and techniques and uses them for evoking inspiration, imagination, invention and the expression of feelings. These are the features of performing, listening and creating music, included in the Slovenian curriculum ([http://www.curriculumonline.ie/en/Primary\\_School\\_Curriculum/Arts\\_Education/Music/Music\\_Teacher\\_Guidelines/](http://www.curriculumonline.ie/en/Primary_School_Curriculum/Arts_Education/Music/Music_Teacher_Guidelines/), 8<sup>th</sup> August 2013).

The current Slovenian curriculum for the nine-year primary school includes teaching goals, defined by activities. Despite the fact that some new contents have been added, this is an open curriculum that offers and provides the teachers a professional autonomy in selecting didactic ways and materials. The planning process provides activities on affective, cognitive, psychomotoric and social field of the child's personality. Affective processes stimulate activities in the cognitive and psychomotoric field of personality and this interactive relation

presents the basis of the pupils' musical development. The emphasis of teacher's work with pupils is on the educational process, not just on the results. Between the pedagogical goals of the curriculum and the pupils' interests, there is a gap that has to be filled. Therefore, the teachers' task is to apply new approaches, oriented towards pupils. The pupils will thus develop holistic thinking, the ability to cooperate with peers, creativity, autonomy and interest in learning (personal notes from the subject of Didactics of Music Education, academic year 2008/2009, and The Music Education Curriculum 2004).

### **Music education according to Edgar Willems**

One of the teaching methods that provide holistic learning is supported by the Edgar Willems Music Center. Edgar Willems is an international association that has existed since 1968. It was founded by Belgian teacher Edgar Willems, who worked mainly in Switzerland, France, South America, Spain and Portugal.

Willems's method emphasizes on the pupil's activity and creativity from the very beginning. Pupils have to test and physically hold all the musical instruments, try all sorts of movements, rhythms and voices. Therefore, it is important that the teacher enables them to experience all of this. Consecutively, pupils will link this experience to their mental aspect and will build knowledge from the unconscious to the conscious.

The school's fundamental activity is the execution of two educational programs:

- Musical introduction by Edgar Willems.
- Music education by Edgar Willems: compulsory subjects are music theory and solfeggio, playing an instrument is a choice. The education lasts six or eight years.

The main features of Willems approach

The teacher's responsibilities:

- Whether the pupils will establish a positive relation or interest towards music depends mainly on the teacher.
- The teacher has to teach with enthusiasm.
- The teacher has to teach in a way that makes the pupils think that he is experiencing the lesson for the first time as well.

- The teacher is a unique person for a pupil – or – a pupil imitates the teacher (psychological game). A pupil will imitate a teacher if he will have a great teaching role model.

The development of pupils is emphasized on: an active experience of musical involvement, the emotional perception of music, intellectual learning from previous experiences and their later conscious reliving.

Edgar Willems distinguishes between three main types of goals:

Music goals:

- To encourage love for music, firstly as a language, then as an art and science.
- To develop an ear for music and sense for rhythm, this presents a pre-stage and the preparation for the solfeggio, to play an instrument or to perform any other musical activity.
- To be open for musical language and musical art of different periods and cultures.

Human goals:

- To stimulate all activities: senso-motoric, emotional, mental and intuitive.
- To develop these activities, getting to know their coherence and accordance.

Social goals:

- To collaborate with everyone equally (children, adolescents and adults), irrespective of their initial knowledge, talent, age and origin.
- To make good use of small groups to improve the richness and complexity of each meeting by listening, expressing of each participant and by intensive communication.

Edgar Willems differs four teaching stages:

1<sup>st</sup> Stage: Musical introduction (3–4 years of age):

The priority is given to oral and practical experience, discovering music phenomena, stimulating musical interest, active participation in activities and developing the taste for fine arts.

The general plan of music lesson implementation is based on four major parts. Each part should last a quarter of a lesson:

- Auditory and vocal development (in order to stir up an interest in the sounds).
- Rhythmic education (in order to stir up pupils' energy into auditory organ).
- Singing songs (life energy of rhythm, melodies, harmonic structures and texts).

- Body's natural movement.

*An example of auditory development is a game for keen ears. Its goal is to find differences in sounds of various rattles. The teacher provides six rattles – three pairs providing three different sounds. Pupils listen to each rattle carefully and match them according to the sound. When the rattles are matched correctly, pupils shake them again and guess what material is inside of them. This game develops the ability to detect different sounds. The rattles can be made of plastic cups, half-filled with e.g. flour, sugar, rice and beans.*

2<sup>nd</sup> Stage: Musical introduction (4–5 years of age):

This stage broadens the knowledge of the 1<sup>st</sup> stage.

3<sup>rd</sup> Stage: Musical introduction before solfeggio and instrument (6–7 years of age):

This is the period, in which the learned concepts are transformed from concrete to abstract thinking: different rules, body lateralization, the use of instruments, etc.

*An example of activity in this period is a game that trains rapid movement of fingers. The game prepares fingers for playing an instrument: the first step of the game is naming fingers, then each finger gets a number (the thumb is number 1, the forefinger is number 2, the middle finger is number 3, etc.). Afterwards the teacher carries out the exercise with fingers by typing on the grounding:*

- 1, 12, 123, 1234, 12345/5, 54, 543, 5432, 54321.
- 12-21, 123-321, etc., 54-45, 543-345, etc.
- 121, 12321, etc.

*When performing this exercise, rhythmic vitality is important: the sweep of hand, the flip with finger and the rebound of hand.*

4<sup>th</sup> Stage: Solfeggio and musical instruments: (after the age of 7):

- Beside solfeggio, one of the peaks of music education, rhythmic, melodic, harmonic reading and improvisation are also significant.
- The musical language continues to be seen as the sum of all musical styles and eras.
- This is the period, in which a pupil starts to play his own instrument.

- At this lesson, music is more important than the musical instrument and life is more important than formal perfection.

*An example of the 4<sup>th</sup> Stage exercise is a sensory exercise of panchromatic tones, for which a pull flute is needed.*

- *The teacher plays the pull flute by pushing the stick slowly in. Pupils imitate the flute sound by singing. They can also accompany the flute playing with hands, moving from the lower to the raised position.*
- *The teacher plays the flute by pulling the stick out and the pupils imitate it by singing.*
- *The teacher places the stick in a suitable position and plays a single tone without moving the stick. The pupils imitate the sound.*

*If no pull flute is available, the teacher can use loudspeakers or a keyboard (personal notes from the lessons about Edgar Willems – Pedagogic Studying Program, academic year 2008/2009).*

“All real music stems from the need to express oneself; it is created from inside and not from the exterior” (<http://www.willems.ch/en/edgard-willems.htm>, 12<sup>th</sup> October 2013).

### **National Association for Music Education – NAFME**

Among the world’s largest arts education organizations, NAFME is the only association that addresses all aspects of music education.

NAFME was founded in 1907 with 64 members, today’s membership has grown to more than 130,000 including active music teachers, university faculty and researchers, college students preparing to be teachers, high school honor society members and Music Friends.

NAFME advocates at the local, state, and national levels of the USA; provides resources for teachers, parents, and administrators; hosts professional development events; and offers a variety of opportunities for students and teachers. The Association orchestrates success for millions of students nationwide and has supported music educators at all teaching levels for more than a century.

Since 1907, NAFME has worked to ensure that every student has access to a well-balanced, comprehensive, and high-quality program of music instruction taught by qualified teachers. NAFME’s activities and resources have been largely responsible for the establishment of music education as a profession, for the promotion and guidance of music study as an integral

part of the school curriculum, and for the development of the National Standards for Arts Education.

NAfME were originally called Music Supervisors National Conference, then Music Educators National Conference (MENC), then MENC: The National Association for Music Education. On September 1, 2011, they became simply National Association for Music Education.

#### National Standards for Music Education

NAfME developed the National Standards for Music Education and administered the overall development of the National Standards for Arts Education (1994) under a grant from the U.S. Department of Education, the National Endowment for the Humanities, and the National Endowment for the Arts. The National Standards represent the first comprehensive set of educational standards for K–12 arts instruction. NAfME has since published more than 20 documents in instructional techniques for helping students accomplish the Standards, dealing with such issues as staffing, scheduling, equipment, technology, and assessment (<http://www.nafme.org/>, 12<sup>th</sup> September 2013).

#### Curriculum for primary school K–4

The Standards divide achievement in to four levels: Ages 2–4, Grades K–4, Grades 5–8 and grades 9–12. Performing, creating, and responding to music are the fundamental music processes in which humans engage. Students, particularly in grades K–4, learn by doing. Singing, playing instruments, moving to music, and creating music enable them to acquire musical skills and knowledge that can be developed in no other way. Learning to read and notate music gives them a skill with which to explore music independently and with others. Listening to, analysing, and evaluating music are important building blocks of musical learning. Further, to participate fully in a diverse, global society, students must understand their own historical and cultural heritage and those of others within their communities and beyond. Because music is a basic expression of human culture, every student should have access to a balanced, comprehensive, and sequential program of study in music.

The standards below in this section describe the cumulative skills and knowledge expected of all students upon exiting grade 4. Students in the earlier grades should engage in developmentally appropriate learning experiences designed to prepare them to achieve these standards at grade 4. Determining the curriculum and the specific instructional activities necessary to achieve the standards is the responsibility of states, local school districts, and individual teachers.

NAfME's standards are interdependent, meaning that the ability to meet one standard facilitates meeting another. For example, Standard 5 aids Standard 4; Standard 1 improves one's proficiency of Standard 2; Standard 6 helps Standard 4, etc. As with a spiral curriculum, the standards operate under the assumption that any topic can be taught in some intellectually honest way at any level of development. Each level builds upon the previous one's expectations (Feldman 2011).

Content standards and Achievement for Grades K–4 (below is listed only some of Achievement Standards):

*1. Content Standard: Singing, alone and with others, a varied repertoire of music.*

Achievement Standard: Students sing independently, on pitch and in rhythm, with appropriate timbre, diction, and posture, and maintain a steady tempo.

*2. Content Standard: Performing on instruments, alone and with others, a varied repertoire of music.*

Achievement Standard: Students perform on pitch, in rhythm, with appropriate dynamics and timbre, and maintain a steady tempo.

*3. Content Standard: Improvising melodies, variations, and accompaniments.*

Achievement Standard: Students improvise “answers” in the same style to given rhythmic and melodic phrases.

*4. Content Standard: Composing and arranging music within specified guidelines.*

Achievement Standard: Students create and arrange music to accompany readings or dramatizations

*5. Content Standard: Reading and notating music.*

Achievement Standard: Students read whole, half, dotted half, quarter, and eighth notes and rests in 24, 34, and 44 meter signatures.

*6. Content Standard: Listening to, analyzing, and describing music.*

Achievement Standard: Students identify simple music forms when presented aurally.

*7. Content Standard: Evaluating music and music performances.*

Achievement Standard: Students devise criteria for evaluating performances and compositions.

*8. Content Standard: Understanding relationships between music, the other arts, and disciplines outside the arts.*

Achievement Standard: Students identify similarities and differences in the meanings of common terms used in the various arts.

*9. Content Standard: Understanding music in relation to history and culture.*

Achievement Standard: Students identify by genre or style aural examples of music from various historical periods and cultures. (Campbell 2010).

National music standards are not the only set of standards available in US. Many states, including New York, California, Virginia and Texas, have their own content standards. Though not identical to NAFME's standards, they generally display a similar balance of declarative, procedural, and conceptual learning. For example, Virginia's standards cover four areas with increasingly advanced tasks for each standard as instrumental music students progress from beginner level (Grade 1–2 music), Intermediate level (Grade 2–4), Advanced level (Grade 4–5), and Artist level (Grade 5–6), (Feldman 2011).

**Decolonization of music curriculum in modern Africa**

In some parts of Africa, they are trying again to deepen the understanding of Africans tradition and its methods of development the knowledge of the local systems (Masoga 2005). There is no need to speak of the African colonial history to understand the pain some African intellectuals. At the Music Conference in Kenya in year 2003, the delegates deplored the general arrogant and domineering Western Music and Art Curriculum at all school levels, that was in use at many schools in Africa.

Learning to read and write Western-oriented music, and playing western instruments is still highly appreciated act for many of their students and parents. Longing to orientate yourself into another culture is not necessarily negative, but it becomes problematic when it became mocking over the native culture or underestimation of the home school system.

The current African music pedagogues perceive a strong desire to include in curriculum African and Western content at the same time which would base on oral and written African folklore. At the conference 2003, which brought together musicians from many African countries has been expressed that the Africans are aware of:

- Their socio-cultural heritage is at risk due to foreigners (the current or former owners of the colonies);
- One of their next steps is to make sure that African teachers will be properly educated in playing their authentic instruments.
- The mother tongue of a state should be the heart of the curriculum. This would create a globally positive image of each country.

These three points should be the main part of the future formation of the school curriculum, in order to return to the roots of their music (Herbst 2005).

### **The curriculum for music education in the Arab world**

The learning approaches of music education in the Arab world arise from the very foundations of informal music institutions, such as private conservatoires. Until recently, there has not been established any formal music education system. In the last decade, an increased interest has aroused in the development of music education and in the proper approaches of teaching music in the classroom. Many Arab countries have a formal music curriculum; however, it is a reproduction of the Western world curriculum with a lack of authenticity.

Lebanon is a cultural, geographical and economical part of the Arab world. The local education center for research and development reports that in 2005 there were only 513 music teachers in their public schools and they were not equably arranged across the country (the country's population is about 4 Million people). It is clear that the music lessons do not have much value for school administrators and get a very low priority. The Lebanon school ideology is highly traditional and there is no possible way that any significant changes will happen in the field of modernization of music education in the following years.

The report of those responsible for the music education in the Arab world shows that they are aware of the new musical innovations worldwide. However, the slow progression, the lack of resources and teachers' weak position make the development of Arabic art impossible. The analyses show that the Arab world is currently focused on the development and improvement of three areas:

- The development of curriculum and teaching methods.
- The education of teachers.
- The production of learning materials for pupils and teachers (Fakhouri 2002).

### **The current improvement of music curriculum in primary schools of China, Hong Kong and Taiwan**

At the turn of the twenty-first century, the school curriculums of China, Hong Kong and Taiwan have introduced some major changes, oriented towards the Western trends, but based on their local context. With this new content of music lessons, the need for a different education of teachers has increased.

The new curriculum standards in China (MCS) give pupils more motivation to learn and try to stimulate them for research and creativity. In addition, the holistic criteria for assessment have been introduced. The aim is to prevent too much emphasis on the content, to prevent taking textbooks' content for granted and the separation from the social context. The teacher is allowed to have autonomy in teaching. Popular songs are included in textbooks; however, their content mostly describes the love for the country. The teaching of Chinese music has been strongly stimulated. The teaching content of such vast country varies from one region to another; there is a major difference especially between urban and rural areas. Due to China's openness to Western ideology, an even greater influence of Western didactics is expected in the future development of China's music education.

In 1997, Hong Kong was returned under the authority of China. At that time, Hong Kong adopted new school legislation. The previous was founded on the Western curriculum, including also creativity and Chinese music. The new teaching approaches emphasize on creativity, Chinese music, popular music and music theory, which correspond to their folklore context. However, the world music is not a part of the curriculum as Hong Kong needs time to re-establish its own culture – Chinese.

Since 1987, Taiwan has followed a more liberally oriented music curriculum. At that time, they were already more open to cultural diversity. Their local arts and culture were included in the lessons and were thus available for development. The music textbooks contained many folk songs and compositions by local composers. In 2001, the very new curriculum was introduced, making learning folk songs an even more important part of the artistic and social sciences. The new curriculum abolished the objective development of nationalism, supported by education and music; however the passion for the support of ethnicity still prevails. The new curriculum provides instructions for teachers, but not in detail, and topics are suggested. The requirements and needs for a different teaching education for teachers occurred at the same time as changes in curriculum (Mills 2009).

## **Conclusion**

Each pupil should have an opportunity to learn music, since music helps people express their inner feelings and presents an important part of our culture. There is no one universal contemporary approach of learning and teaching music that could be used by all schools of

the world. One particular method may be contemporary for a certain culture, folklore, language or mentality, but when it is transferred to another environment, it may hinder the education process.

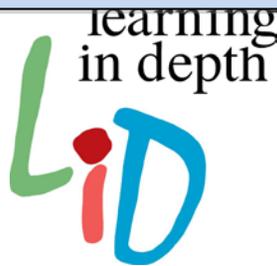
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# Learning in Depth with Imaginative Education Secondary Social Studies



Presenter: Ms. Corine Carey  
Workshop Session

My session examines using Learning in Depth to teach Secondary Social Studies while encouraging imagination and engagement in your classroom. My focus will be on Social Studies 8-11 and look at how to get your students more engaged in their learning and education through imaginative teaching strategies, independent inquiry-based learning in depth topics, and excitement about history and social studies!

Presenter: Ms. Corine Carey \*  
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Abstract:

As the Social Studies Department Head of Burnaby North Secondary and as a Masters of Imaginative Education Student of Simon Fraser University, I have become energized about a new strategy to teach Secondary Social Studies. After 11 years of teaching full time in the classroom I felt I needed a challenge or shift in direction within my own teaching practice. I teach everything from Social Studies 8, AP Psychology 12 and AP World History and more. I enrolled in the Imaginative Education Masters program because I saw Dr. Kieran Egan's work as something I would be interested in.

Long story short, I was sold. For the past year I have been in classes and preparing to implement my own version of Learning in Depth with my Social Studies 8 classes. I have implemented the program this year and it has been a huge success so far. My students can go beyond the textbook and get excited about their topics from their own independent angles and perspectives. It is a program that enriches the prescribed learning outcomes and curriculum established by any Ministry of Education or Government.

My session would look at the history behind Learning in Depth and how I came to find it, how I implemented it with examples and suggestions for colleagues, specific strategies that I use to be imaginative in my lesson planning around all of my socials classes including Learning in Depth time and the regular curriculum, and look at assessment practices surrounding my Learning in Depth program and regular class lessons.

My plan is to have an interactive session (power-point presentation, activities and demonstrations, and a hands-on practical package of strategies) that encourages fellow peers to reflect upon their own teaching practices in Secondary Social Studies and learn a new way of exciting students about learning. I will present but also give a practical and hands-on package of ways to implement, create and plan, assess, and use Imaginative Education and LiD in a social studies or history classroom. I will have 6+ months of evidence from my own classroom and strongly believe that many educators are doing many of these things on their own but are not sure how to enhance what they are doing. My goal is to help them reach that next level that will energize them and in turn their students to become more engaged in their teaching and learning.

If you require more specific information, please email me at anytime. I look forward to your response and am very excited about your conference.

Sincerely,

**Corine Carey**

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# The Flipped Classroom Model

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**Abstract:** The flipped classroom model is an approach to maximizing classroom time by using technology to "flip" the traditional model of teaching. Content in the form of online lectures and presentations is offered outside of class, while hands-on activities and collaborative learning take place in the classroom. With innovative tools for producing online content and interactive lessons, instruction that used to occur in class is now accessed at home. Class becomes the place to work through problems, advance concepts and engage students with creative learning strategies. Most importantly, all aspects of instruction can be rethought to best maximize the scarcest resource of all, time. This model can be applied to both K-12 and higher education learning environments.

1. Title: Can Directed Dance Activities Contribute to Vocabulary Learning?
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## Abstract :

This poster presents the results of an innovative project using dance activities to enhance vocabulary among four to six year old children from a socioeconomically disadvantaged neighborhood near Montreal, Canada. Previous studies have shown that children coming from low SES (socio economic status) families tend to have a weaker vocabulary than their peers from more privileged backgrounds. Since practices like reading aloud and explicit teaching of words have produced better results among children from average and privileged backgrounds, new ideas are needed about how to best foster vocabulary acquisition by disadvantaged children (Marulis et Neuman, 2010). The potential for dance activities to positively impact upon child development has been well documented (April, 2010). Our study sought to more specifically explore how directed dance activities based on kinesthetic and creative involvement with the four seasons might foster vocabulary acquisition on this theme.

Children were individually interviewed before the activity, right after it and three weeks after it in order to determine how their vocabulary related to the four seasons had been affected by the dance activities. During each interview, children were asked to describe what they know about the seasons through a general question (What do you know about the seasons?) as well as more specific questions (can you tell me what winter is? What do you do in winter?). Results show that semantic knowledge about the seasons evolved between the first and the last interview. More precisely, some children specified their vocabulary about the seasons while others reorganized their semantic knowledge. This study contributes to a better understanding of multidisciplinary interventions and innovative pathways to foster vocabulary acquisition among children from low SES.

TITLE: Using the flipped classroom to teach flower/foilage production, plant growth/development, and crop modeling courses

TOPIC AREA: Higher Education

PRESENTATION FORMAT: Poster Session

DESCRIPTION OF PRESENTATION:

The flipped classroom teaching technique was used in several undergraduate and graduate horticulture courses. Lecture materials were assigned for outside of class, and class time was devoted to active learning in-class activities.

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## ABSTRACT:

In a typical classroom setting, the instructor lectures and students do homework activities outside of class. The flipped classroom technique was used in several horticulture courses in which lecture material was assigned for homework, and students did active learning activities in the classroom. The objective of this presentation is to discuss how the flipped classroom approach was used in Tropical Plant & Soil Sciences (TPSS) courses—TPSS 402 Flower and Foliage Production, TPSS 601 Crop Modeling, and TPSS 674 Plant Growth and Development.

TPSS 402 is an upper level undergraduate level course offered every other fall term. Lecture topics focused on factors affecting plant growth, namely, light, temperature, plant nutrition, plant growth regulation, pest and disease control, and postharvest handling. Later in the semester, production requirements of commercially important flower and foliage crops grown in Hawaii were discussed. Online information sources such as YouTube videos, e-Gro University modules, and online articles in Greenhouse Grower and Greenhouse Product News, were provided as assigned readings to students. Virtual field tours of production sites were experienced on UBloom.com.

In TPSS 601 and 674, various lectures were replaced by YouTube videos, websites, and HortTalks presentations which students viewed outside of class. They reviewed the Virtual Plants online crop simulation, Flower Power wheat flowering model, Prune Chilling Prediction Model, chilling accumulation models, and a growing degree-days phenology model. Students were encouraged to bring their laptops, tablets, and smartphones to class to do Internet searches for relevant information for class discussions, small group discussions, and hands-on activities. In class, students ran online computer simulations. For homework, students searched for online crop models and brought their URLs to class to share with other students. Using the flipped classroom approach helped reduce lecture preparation time and create an active learning environment in the classroom.

#1541

1. ***Title:***

Using Portraiture to Understand: Going into Teaching in K-8 after Another Career

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6. ***Abstract:***

As a methodology based on interviews and observations, this aims to give intuitive, but carefully developed and documented larger and deeper impressions of the form and shape which particular characteristics take in the life of an individual participant. At the same time, what the researcher sees and brings out in the portrait reflects and crucially depends on their own inspiration. This is the study of nontraditional teachers who went into teaching after another career.

**TITLE:** Job Satisfaction Level of Female Teachers in Turkey

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### **Abstract**

In this study, the researchers explore the factors affecting the satisfaction of female teachers in their workplace in Turkey. For this purpose, the researchers address the following research questions: 1) what is the job satisfaction level of female teachers in schools? 2) what factors affect their job satisfaction? To this extent, the researchers employed a qualitative research methodology interviewing 12 female teachers (three purposefully selected female teachers from four different elementary schools) and performing document analysis to gather in-depth information.

Based on the collected data the researchers found that many participants (10 out of 12) have job dissatisfaction because of the following reasons: 1) inadequate administrative support, 2) lack of inclusion in the decision making processes in school, 3) low salary, 4) student discipline problems, 5) lack of student motivation, 6) unsafe environment, 7) poor opportunity for professional advancement, 8) lack of community support, 9) lack of professional competence of colleagues, and 10) intrusions on teaching time. The researchers also found that “the less experienced teachers”, less than 10 years of experience, are more likely seek different jobs or career opportunities, or to pursue graduate level training compared with the experienced teachers, more than 10 years of experience. In addition, most female teachers (9 out of 12) believe, because of their gender, male teachers, school administrators, and the regional director ignores them and their desire for success.

**Keywords:** satisfaction, female teachers, workplace, Turkey

1. ***Title of the submission:*** The Disposition and Character of a Teacher: Can Anyone Be a Great Teacher?
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6. ***Abstract:***

Teacher preparation in American is based on a triadic model related to knowledge, skills, and dispositions. Often the subjective aspect of teacher dispositions takes a “back-seat” to the more easily assessable, quantitative nature of knowledge and skills. This workshop presentation will provide an opportunity for attendees to discuss the non-cognitive skills and dispositions/character as related to effective teaching. The agenda for this workshop presentation will allow an opportunity for attendees to converse about the non-cognitive skills (i.e. “soft skills”) and dispositions/character as related to effective teaching.

Anticipated discussion points will include the following:

- Defining teacher dispositions, as found in the literature as well as the impact of cultural influences on dispositions/character
- The implications for the variety of definitions of dispositions on teacher education
- Ethical issues surrounding dispositions
- Discussion surrounding the importance of “non-cognitive” aspects of teachers and the hierarchical aspects of dispositions
- How to effectively assess teacher dispositions, both within teacher education programs and with practicing teachers (current and future practices)

**1. Title of the submission** - Smiling Your Way through Troubled Times: Moving from Burnout to Resilience

**2. Names of the authors**

- *Lead author / presenter* - Dr. Traci L. Van Prooyen (Assistant Professor)
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**6. Abstract**

The agenda for this workshop will include current definitions, research, statistics, and symptoms of burnout and why the recognition of burnout is important for educators and those in the helping professions. In addition, current definitions and research related to resilience for educators and helping professions is essential for well-being as well as those who are being taught and assisted. The primary focus of the workshop will also include activities in which participants will be able to practice and apply some of (but not limited to) the following techniques to help when troubled times arise through experiences of helping others:

- Creation of a humor file
- Creation of a “to keep” file
- Vision boarding (reflection on lives and careers)
- Stress management and relaxation techniques
- Guidelines for building quality, supportive relationships
- List of additional resources related to resilience

Title of the Submission: Practices of Data-Driven School Development

Topic Area of the Submission: Educational Administration

Presentation Format: Paper Session

Description of Presentation: This presentation explores a significant topic in the school field. The study not only expands the academic inquiry of data use, but also provides a detailed sketch of school practices.

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# **Practices of Data-Driven School Development**

## **Abstract**

Propelled by the international comparison of student achievement in the 21st century, student learning once again caught the world's attention and became a significant issue in the agenda of education reform. Data-driven decision making thus reenergizes its power in this accountability context, playing an important role to assist school improvement and to enhance student achievement.

In order to investigate how schools use data to ground their improvement efforts, a qualitative case study was conducted. It explored how a high school in Taiwan used data to drive change through its collaboration with a university. Considering preexisting beliefs influence how school members enact new intervention, sensemaking theory was employed to examine teachers' conceptions of data use in the case school. Besides, the process of using data to formulate school improvement plan and the conditions affecting how the school participants' using data were also researched.

In the study, observation, interview and document analysis were used to collect data. The findings indicated that the case school learned to integrate different data to diagnose its weaknesses and problems through the facilitation of the university. Grounded on the data, improvement action plan was developed. It was also observed that school faculty with suspicious attitude in the initial stage, and then gradually changed their mentality, conceptualizing that data might be a legitimate basis for policy decisions in the sense-making process. In addition, principal leadership, school member's time, capacity and willingness were critical conditions for successful use of data in the school.

**Paper**

**Promise Neighborhood Evaluation:**

**Considering the Effect of Variables on Each Other**

**Submitted by:**

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**To**

**Hawaii International Conference on Education**

**October 17, 2013**

## Promise Neighborhood Evaluation

Texas Tech University (TTU) received a Promise Neighborhood grant from the U.S. Department of Education on behalf of a significantly underserved, impoverished community in Lubbock, Texas. Consequences of past de jure discrimination and subsequent poor school performance, low employment and substandard health services plague the neighborhood, leaving most residents with a sense of hopelessness and frustration. Promise Neighborhood grants are designated for the purpose of revitalizing a community, utilizing the school district and supporting agencies as catalysts. Programs are proposed to engage residents, support students from cradle-to-college and career preparedness, and rejuvenate community involvement. Multivariate analyses focusing on longitudinal analysis of individual and group interventions will be conducted to evaluate impact on key outcome measures, common to all Promise Neighborhoods.

### **Statement of Need**

While many community agencies, including social service and health agencies had been providing services, their efforts remained isolated – uncoordinated with the residents and schools – and their effectiveness had not been adequately measured. Census and health data indicated that families' basic needs were not being met, and problems such as food insecurity, medical facility access, and physical safety were common among residents. Students were not receiving adequate nutrition, exercise and access to health care. Comprehensive, coordinated services are being implemented, leveraging the neighborhood schools as a means of revitalizing the neighborhood as well as reforming school curriculum.

## Promise Neighborhood Evaluation

A Promise Neighborhood is both a place and a strategy. It is a defined community, established by geographical boundaries, with quantified resource needs. It is also a strategy, that brings together resources from within the community as well as from other sources in order to facilitate the active participation of residents in identifying and addressing challenges, thus contributing to capacity building and coordinated services. The strategy is to engage community members and students in the decision-making process, building upon their strengths, which in turn would be the means for identifying and coordinating services and relieving neighborhood distress. In the process residents would become active contributors in addressing challenges and embarking on solutions.

The design of the project required an approach to program evaluation that simultaneously considered improvements in service delivery and the effectiveness of individual programs. The variety of services and complexity of the program design necessitated both a longitudinal and case management approach to data collection and ultimately the use of sophisticated multivariate modeling (Structural Equation Modeling, SEM), to capture the relationship among services, individual differences, and interventions over time. Ultimately, the authors will measure the impact of associated variables on key performance indicators, closely examining the contribution of individual variables on the variance in outcome measures.

### **Methods**

The national Promise Neighborhood program focuses on fourteen Government Performance and Results Act (GPRA) performance objectives. Table 1 lists the required objectives. (Insert table 1 here.) For each objective, the present authors developed a detailed protocol which included:

## Promise Neighborhood Evaluation

- Specific Performance Measure for that objective
- Data Source, e.g., survey instrument, medical record, school record, attendance at events, pre- and post-questionnaire for interventions such as a parenting class, etc.
- Original source of Questions to be Asked, e.g. validated instrument vs. faculty-developed instrument
- Categorization as Aggregate or Individual Level of Data Collection
- Categorization as Identifiable or Non-Identifiable Data (establishment of procedures for Informed Consent and maintaining confidentiality)
- Categorization as Longitudinal or Case-Management Level Data
- Determination of Other Variables to which Specific Data Would be Combined in the Analyses
- Comprehensive Analyzes.

Interventions include expansion of neighborhood health clinic hours to evenings and weekends; development of parenting classes for new and expectant parents; expansion of early learning opportunities; parent/toddler “Read Aloud” sessions at libraries and churches throughout the community; project-based learning revisions to the school curriculum; intensive academic intervention for students at risk; coordination of social and school services for students and families; mental health services for students and families; cooking and nutrition classes for students and families; after-school enrichment; high school dual enrollment college courses; and informational programs for students and their parents on college admissions requirements and financial aid.

## Promise Neighborhood Evaluation

- Anonymous Neighborhood Survey
- Anonymous School Survey
- Health Clinic Data on Use Rates and Child Health Variables
- Community Partner service data (Salvation Army, City of Lubbock, Red Cross, United Way, etc.)

### **Data Sources**

- Individual and group data are collected in a common data platform; with the following sources for de-identified group data:

- Anonymous Neighborhood Survey
- Anonymous School Survey
- Health Clinic Data on Use Rates and Child Health Variables
- Community Partner Service Data (Salvation Army, City of Lubbock, Red Cross, United Way, etc.)

- Individual “case” data is collected using two methodologies: master data agreements with partners; and program-specific instruments and measures. We have negotiated elaborated master data agreements, allowing our data system to integrate with the data systems of key strategic partners, obviating the need to collect profile data from participants during service deliver. Examples of data collected from master data agreements include:

- Nutritional Screenings
- Head Start Screenings on Multiple Domains of Age-Appropriate Functioning

## Promise Neighborhood Evaluation

- Early Childhood Enrollment Data
- School Performance Data
- School Attendance Data
- Student Mobility Data
- School Disciplinary Referral Data
- School Graduation Data

- Examples of data collected at our service delivery points include:

- Pre and Post- Measures for Specific Interventions
- Follow-up Data on Graduates via Databases and Surveys
- After-School Participation Data.

A concentrated review of existing literature and research led us to the development of specific predictive and causal models to test over time, as we ultimately attempt to make and measure tangible progress and improvement in the Promise Neighborhood.

### **Support for Approach**

The Modeling Approach measures the impact of individual program participation and performance on the targeted outcome variables, accounting for various individual difference predictors. By making use of the Structural Equation Modeling (SEM) statistical approach, it is possible to determine the relative strength of variables in predicting outcome variables. SEM is a statistical techniques that “is ideally suited to address theoretically motivated quasi-experimental research questions (Little, 2013, p. 13). It makes fewer assumptions than multiple regression or analysis of variance, an important consideration when conducting analyses or data that may not

## Promise Neighborhood Evaluation

be normally distributed. In addition, the method allows for the association among all variables (exogenous, endogenous), the presence of unaccounted for variance (and its effects on the model), and the importance of mathematical directionality in terms of causality. Driven by a robust theoretical underpinning, structural modeling offers sophisticated means for examining variables in such a diverse and intricate project and for collection of services over time.

### **Significance**

The present study goes beyond the identification of student needs and the study of effectiveness of individual interventions or combinations of interventions. It demonstrates the usefulness of the powerful SEM methodology in identifying appropriate constellations of services for students and families.

### **Acknowledgement**

This work is supported by the U.S. Department of Education (Grant No. [U215N120013](#))

### **Reference**

Little, T.D. 2013. *Longitudinal structural equation modeling*. NY: Guilford.

**Table 1: Performance Measures**

**Government Performance and Results Act (GPRA) Indicators for Promise Neighborhoods**

<u>GPRA #</u>	<u>DESCRIPTION</u>
<u>GPRA 1:</u>	<i>Number and percent of children, from birth to kindergarten entry, who have a place where they usually go, other than an emergency room, when they are sick or in need of advice about their health.</i>
<u>GPRA 2:</u>	<i>Number and percent of three-year-olds and children in kindergarten who demonstrate at the beginning of the program or school year age-appropriate functioning across multiple domains of early learning as determined using developmentally-appropriate early learning measures.</i>
<u>GPRA 3:</u>	<i>Number and percent of children, from birth to kindergarten entry, participating in center- based or formal home-based early learning settings or programs, which may include Early Head Start, Head Start, child care, or publicly-funded preschool.</i>
<u>GPRA 4:</u>	<i>Number and percent of students at or above grade level according to State mathematics and English language arts assessments in at least the grades required by the ESEA (3rd through 8th and once in high school).</i>
<u>GPRA 5:</u>	<i>Attendance rate of students in 6th, 7th, 8th, and 9th grade.</i>
<u>GPRA 6:</u>	<i>Graduation rate (as defined in the notice).</i>
<u>GPRA 7:</u>	<i>Number and percent of Promise Neighborhood students who graduate with a regular high school diploma and obtain postsecondary degrees, vocational certificates, or other industry- recognized certifications or credentials without the need for remediation.</i>
<u>GPRA 8:</u>	<i>Number and percent of children who participate in at least 60 minutes of moderate to vigorous physical activity daily.</i>
<u>GPRA 9:</u>	<i>Number and percent of children who consume five or more servings of fruits and vegetables daily.</i>
<u>GPRA 10:</u>	<i>Number and percent of students who feel safe at school and traveling to and from school, as measured by a school climate needs assessment.</i>
<u>GPRA 11:</u>	<i>Student mobility rate (as defined in the notice).</i>
<u>GPRA 12:</u>	<i>For children birth to kindergarten entry, the number and percent of parents or family members who report reading to their children three or more times a week.</i>
<u>GPRA 13:</u>	<i>For children in kindergarten through 8th grades, the number and percent of parents or family members who report encouraging their children to read books outside of school.</i>
<u>GPRA 14:</u>	<i>For children in the 9th to 12th grades, the number and percent of parents or family members who report talking with their child about the importance of college and career.</i>
<u>GPRA 15:</u>	<i>Number and percent of students who have school and home access (and percent of the day they have access) to broadband internet and a connected computing device.</i>

Promise Neighborhood Evaluation

# Hybrid, Blended, Flipped, and Inverted: Defining Terms in a Two Dimensional Taxonomy

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## ABSTRACT

The terms hybrid, blended, flipped, and inverted are inconsistently defined in the literature creating a barrier to efficient research on and implementations of these types of classes. This paper examines existing definitions of these new types of courses and uses those definitions to identify two dimensions critical to differentiating types of courses: how instruction is delivered to students and what type of instruction students receive. The paper then addresses how these dimensions were used to create a taxonomy that defines hybrid, blended, flipped, and inverted classrooms. The taxonomy focuses on learning experiences in which students receive instructional guidance either directly from an instructor or indirectly from an instructional designer (e.g., through educational software); therefore, some elements of courses, such as unmonitored problem solving, are not specified.

## INTRODUCTION

Educators have been adapting their courses by using computing technology to promote student engagement (e.g., by using online simulations), make course content more accessible (e.g., by using video conferencing), and much more. The increasing use of technology impacts students' learning experiences, especially how students receive instruction and what type of instruction they receive. In some cases, the experience of learners had changed so drastically that it became necessary to create a new name to describe the course (i.e., hybrid, blended, flipped, and inverted). Much research has been conducted in the past few years to assess the effectiveness of these new types of courses. In this literature, researchers inconsistently use these terms to describe the type of course that they are evaluating, causing ideas and discussion in the literature to be unclear.

Many researchers use the terms hybrid and blended interchangeably. In three of the first five articles found in a search for "blended" (using the ERIC database on 13 September 2013), the terms blended and hybrid are represented as the same concept (Calderon, Ginsberg, & Ciabocchi, 2012; Dikmenli & Unaldi, 2013; Gecer & Dag, 2012; Owston, York, & Murtha, 2013; Pregot, 2013). This result suggests that some researchers use blended and

hybrid to represent the same concept while some do not (or perhaps are not aware of the term hybrid). Additionally, the term flipped is indistinguishable from the term inverted in the literature, but some researchers use flipped and some use inverted (e.g., Bishop & Verleger, 2013; Morin, Kecskemeti, Harper, & Clingan, 2013; Strayer, 2012).

Inconsistent definitions of hybrid, blended, flipped, and inverted classrooms cause these terms to be confused and wastes the time of researchers and practitioners interested in studying and implementing these types of courses. The inconsistencies make comparing results, replicating experiments, and finding and deeply understanding information from the research difficult. For example, imagine the theoretical and pragmatic repercussions if the terms *secondary* and *higher* education were used interchangeably. To address this issue, we propose a taxonomy that considers critical dimensions of courses and consistently defines these terms by these dimensions.

## Identifying Dimensions from Existing Definitions

To identify the relevant dimensions for defining these courses, we qualitatively analyzed a sample of previous definitions of hybrid, blended, flipped, and inverted classrooms (see Table 1) using techniques described in Taylor-Powell and Renner (2003) to find the emergent dimensions. We identified four primary dimensions:

1. *Instructional location* describes whether the learner receives instruction in a classroom or in a non-traditional setting (e.g., home, library, coffee shop),
2. *Delivery medium* describes whether a person or technology delivers instruction to the learner,
3. *Instruction type* describes whether the learner is receiving content (e.g., lecture) or applying content to learning activities (e.g., practice problems), and
4. *Synchronicity* describes whether learners are following a group pace or individual pace.

Then each definition in the sample was scored by two raters on whether it included information about the dimensions. The initial interrater agreement was 92%. Then, raters discussed disagreements until they reached full agreement. The dimensions of the definitions are represented in Table 2.

Article	Term	Definition
Sands, 2002	Hybrid	"...hybrid course, seat time is reduced and some of the course activities—information transfer, exchange of ideas, testing, essay-writing, etc.—are distributed throughout the semester, with students accessing course materials and performing other tasks online."
Johnson, 2012, pp. 94	Hybrid	"Hybrid classes have required amounts of physical attendance, but some of that attendance requirement is replaced by online work."
Arispe & Blake, 2012, pp. 450	Hybrid	"We will use the <i>hybrid</i> to refer to courses that regularly combine scheduled classroom sessions with online meetings."
Allen & Seaman, 2010, pp. 5	Hybrid and Blended	"Course that blends online and face-to-face delivery. Substantial proportion [30-79%] of the content is delivered online...and typically has a reduced number of face-to-face meetings."
Singh & Reed, 2001, pp. 2	Blended	"Blended learning focuses on optimizing achievement of learning objective by applying the "right" learning technologies to match the "right" personal learning style to transfer the "right" skills to the "right" person at the "right" time."
Garrison & Vaughn, 2008, pp. 5	Blended	"The basic principle is that face-to-face oral communication and online written communication are optimally integrated..."
Johnson, 2012, pp. 94	Blended	"Blended classes meet face-to-face full time like regular classes but are augmented by formal, extensive online resources."
Johnson, 2012, pp. 94	Flipped	"One model of a blended classroom is the flipped classroom, in which students access the curricular content outside of class and then use class time to discuss, apply, and clarify the content."
Carpenter & Pease, 2012, pp. 37	Flipped	"Flipping describes a model [in which] ... At home, students watch online lectures, while class time is spent on...processing activities. The teacher, freed from front-of-class lecturing, works more intensively with individuals and groups of students."
Morin, Kecskemeti, Harper, & Clingan, 2013	Flipped and Inverted	"The inverted classroom "flips" the in-class and out-of-class activities, often by moving the lecture content before class and working on homework and hands-on activities during class time."
Bishop & Verleger, 2013	Flipped and Inverted	"the flipped classroom...employs asynchronous video lectures and practice problems as homework, and active, group-based problem solving activities in the classroom."
Strayer, 2012	Inverted	"[Inverted classrooms] rely on technology to introduce students to course content outside of class so that students can engage that content at a deeper level inside the classroom."
Lage, Platt, & Treglia, 2000, pp. 32	Inverted	"Inverting the classroom means that events that have traditionally take place inside the classroom now take place outside the classroom and vice versa"

**Table 1. List of Previous Definitions of Hybrid, Blended, Flipped, and Inverted.** Sample definitions were selected from a range of publication dates (i.e., 2000-2013) and publication types (e.g., empirical articles, books, magazines). Definitions that are cited frequently, such as those by Lage et al. (2000) and Allen and Seaman (2010), were also included.

Table 2 illustrates the dimensions that are used to describe hybrid, blended, flipped, and inverted classrooms. Definitions of hybrid courses consistently describe instructional location; definitions of blended courses consistently describe delivery medium; definitions of flipped and inverted courses consistently describe instructional location and instruction type. These patterns suggest which dimensions are important to defining these terms.

Flipped/inverted courses are widely considered to be a type of blended learning (e.g., Johnson, 2012; Strayer, 2012); therefore, it seems contrary that flipped/inverted courses and blended courses are not defined by the same

dimensions. To explore this discrepancy, the instructional location and delivery medium dimensions were examined more closely. Because these two dimensions discuss the same type of learning experiences (e.g., face-to-face or online) from different perspectives, these dimensions seem to address the same issue: how learners receive instruction. To reduce redundancy, we propose that these two dimensions be represented by a single dimension.

We think that how instruction is delivered is more descriptive of learning experiences than the physical environment in which instruction is received. If instruction is delivered via an instructor, then it is implied that the learner and instructor are face-to-face. On the other hand,

Article	Term	Location of Instruction	Delivery of Instruction	Type of Instruction	Synchronicity of Instruction
Sands, 2002	Hybrid	x	x	x	
Allen & Seaman, 2010	Hybrid	x	x		
Johnson, 2012	Hybrid	x			
Arispe & Blake, 2012	Hybrid	x			
Singh & Reed, 2001	Blended		x	x	x
Garrison & Vaughn, 2008	Blended		x		
Allen & Seaman, 2010	Blended	x	x		
Johnson, 2012	Blended	x	x		
Carpenter & Pease, 2012	Flipped	x	x	x	
Johnson, 2012	Flipped	x		x	
Bishop & Verleger, 2013	Flipped	x	x	x	x
Morin et al., 2013	Flipped	x		x	
Lage et al., 2000	Inverted	x		x	
Strayer, 2012	Inverted	x	x	x	
Bishop & Verleger, 2013	Inverted	x	x	x	x
Morin et al., 2013	Inverted	x		x	

**Table 2. List of Previous Definitions of Hybrid, Blended, Flipped, and Inverted Characterized by Their Underlying Dimensions.**

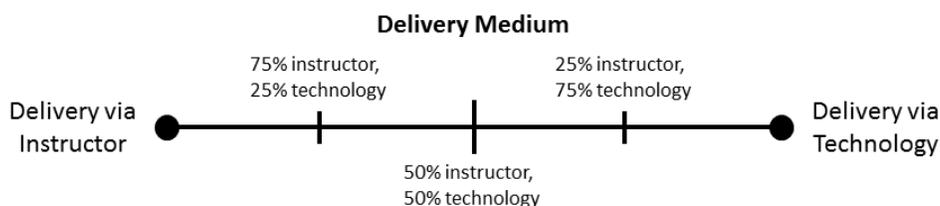
if instruction is delivered via technology, then the location of the student can be anywhere that has an internet connection, including a classroom. Delivering instruction via technology is beneficial because it affords flexibility in instruction on a variety of factors including location, pace, and style (Gedik, Kiraz, & Ozden, 2013; Singh & Reed, 2001). Given the mobility of modern technology, specifying how instruction is delivered to students rather than where instruction is delivered might be more a useful dimension for defining courses.

In the sample of definitions, describing the synchronicity of instruction was not common. Instruction can be synchronous or asynchronous regardless of whether it is delivered in class or online, via an instructor or technology, or for lecture or application activities. For this reason, synchronicity could be considered a product of the instructional method. For example, learners watch online video lectures individually, so instruction is asynchronous. For another example, learners watch a live lecture in class with an instructor, so instruction is synchronous. Though

synchronicity is an important factor in learning experiences, we propose that synchronicity is not a defining dimension of courses.

#### Dimensions Used in Taxonomy

Two dimensions were used for defining courses: delivery medium and instruction type. Delivery medium is defined as the medium through which instruction is delivered to the learner. The two main types of delivery media are via an instructor and via technology, so they will be the end points of this dimension (see Figure 1). Delivery via an instructor implies that the learner receives instruction in a face-to-face environment, whereas delivery via technology makes no assumptions about the physical environment of the student. Instead, technology-delivered instruction allows for flexibility in the learning experience. For example, the physical location of the learner is flexible in a class that meets synchronously via a video conference. For another example, the pace of the instruction is flexible when learners individually watch a video recorded by their instructor.



*Figure 1.* Delivery medium dimension of learning experiences ranging from 100% delivery via an instructor to 100% delivery via technology.

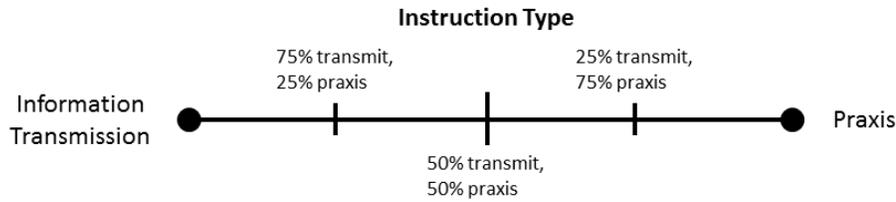


Figure 2. Instruction type dimension of learning experiences ranging from 100% information transmission to 100% praxis.

The dimension of instruction type is defined by the roles that the students and instructors take during instruction. The two main types of instruction are information transmission and praxis, so they will be the end points of this dimension (see Figure 2). Information transmission is defined as instructor-driven delivery of content to the learner (Gonzales, 2012). During information transmission, the instructor or instructional program dictates information while the student receives information. Examples of information transmission are lectures and educational videos. Praxis, on the other hand, is defined as student-driven learning through the application of knowledge (Singh, 2012). During praxis, the student applies knowledge while the instructor or program supports the student by providing guidance and feedback. Examples of praxis are experiential learning and discussions.

courses, such as hybrid and blended classrooms, and create consistent definitions for them. We use these dimensions to form the structural foundation of the Learning Experiences Taxonomy (see Figure 3). The taxonomy focuses on learning experiences in which instructors interactively guide students for the purpose of acquiring new knowledge. This guidance addresses, among other things, the credibility of content, how to organize knowledge, the progress of the student, strategies for problem solving. Therefore, the taxonomy does not specify learning activities that are entirely student-directed. For example, it does not include unmonitored peer discussion (i.e., face-to-face or online) or the unguided use of the Internet to look up additional information. It also does not include assignments on which students receive delayed feedback such as homework assignments that students complete independently.

The delivery medium and instruction type dimensions are independent and can be used to differentiate types of

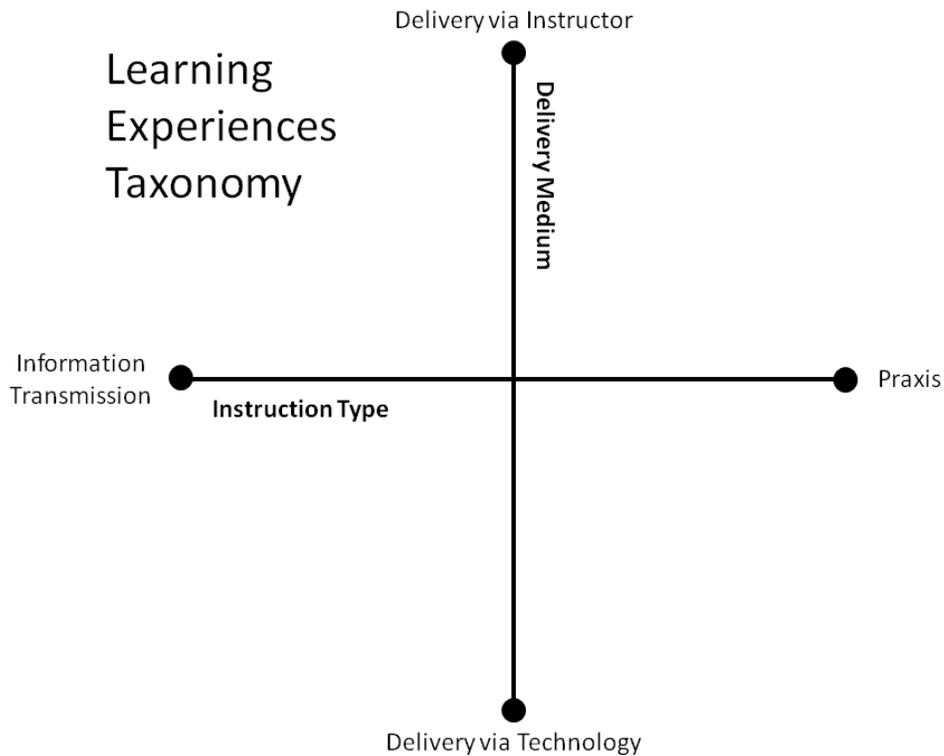


Figure 3. Delivery medium and instruction type dimensions orthogonally crossed to form the structural foundation for Learning Experiences Taxonomy.

### The Fundamental Learning Experiences

The dimensions form four quadrants, and these quadrants represent the four fundamental learning experiences in the taxonomy (see Figure 4). The following sections define each of the four quadrants and offer two examples of classes, one in the science domain (i.e., chemistry) and one in the humanities domain (i.e., history).

*Instructor-transmitted* describes the top, left quadrant in which courses are primarily delivered via instructor and information transmission. In the examples below, the only instructional guidance that students receive is through watching or listening to their instructor.

Example Chemistry Class	Example History Class
During class, students watch demonstrations of lab procedures performed by their instructor.	During class, students listen to the instructor lecture.

*Technology-transmitted* describes the bottom, left quadrant in which courses are primarily delivered via technology and information transmission. In the examples below, the only instructional guidance that students receive is through watching videos.

Example Chemistry Class	Example History Class
During class, students watch videos of demonstrations of lab procedures selected by the instructor.	There is no face-to-face class. Students individually listen to pre-recorded lectures by the instructor.

*Instructor-mediated* describes the top, right quadrant in which courses are primarily delivered via instructor and praxis (i.e., the student applies knowledge with an instructor who provides guidance and feedback). In the examples below, the students receive feedback on their progress from the instructor during class.

Example Chemistry Class	Example History Class
During class, students use lab equipment to complete assignments.	During class, students discuss readings and ideas.

*Technology-mediated* describes the bottom, right quadrant in which courses are primarily delivery via technology and praxis (i.e., the student applies knowledge using technology that provides guidance and feedback). In the examples below, the online program and video game are providing feedback to the students about how well they are applying knowledge.

Example Chemistry Class	Example History Class
Students work through lab assignments using an online lab simulator.	Students play through an educational video game by answering questions.

The examples given for these fundamental learning experiences use only one type of delivery and one type of instruction; therefore, they would all be located at the outer corners of the taxonomy. Many courses, however, use a combination of delivery media and instruction types

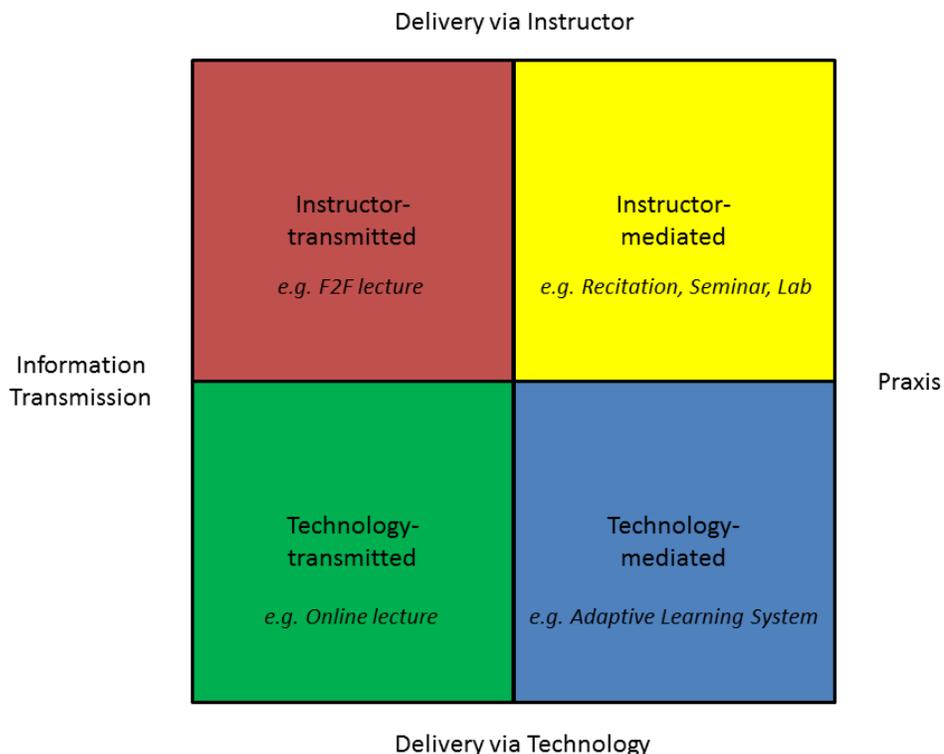


Figure 4. Fundamental learning experiences form the four quadrants of the taxonomy.

resulting in a course that would fall more towards the center of the taxonomy. For example, if a course was delivered via an instructor but half information transmission and half praxis, then, it would be in the middle of the top edge of the taxonomy. A course like this could not be accurately categorized by one of the four fundamental learning experiences. In the taxonomy, courses are only classified by the four fundamentals if they do not use a substantial portion (more than 25%) of the pedagogical elements from other quadrants. Courses that use a substantial portion of two fundamental learning experiences are called combined learning experiences.

### The Combined Learning Experiences

The taxonomy has four combined learning experiences: one for each combination of adjacent quadrants (see Figure 5). Though hybrid and blended are often confounded (e.g., Allen & Seaman, 2010), in discriminating definitions, hybrid is used to describe courses that are simply part face-to-face and part online (e.g., Arispe & Blake, 2012; Johnson, 2012; Sands, 2002). For this reason, the taxonomy uses hybrid to describe courses that combine delivery via an instructor and delivery via technology.

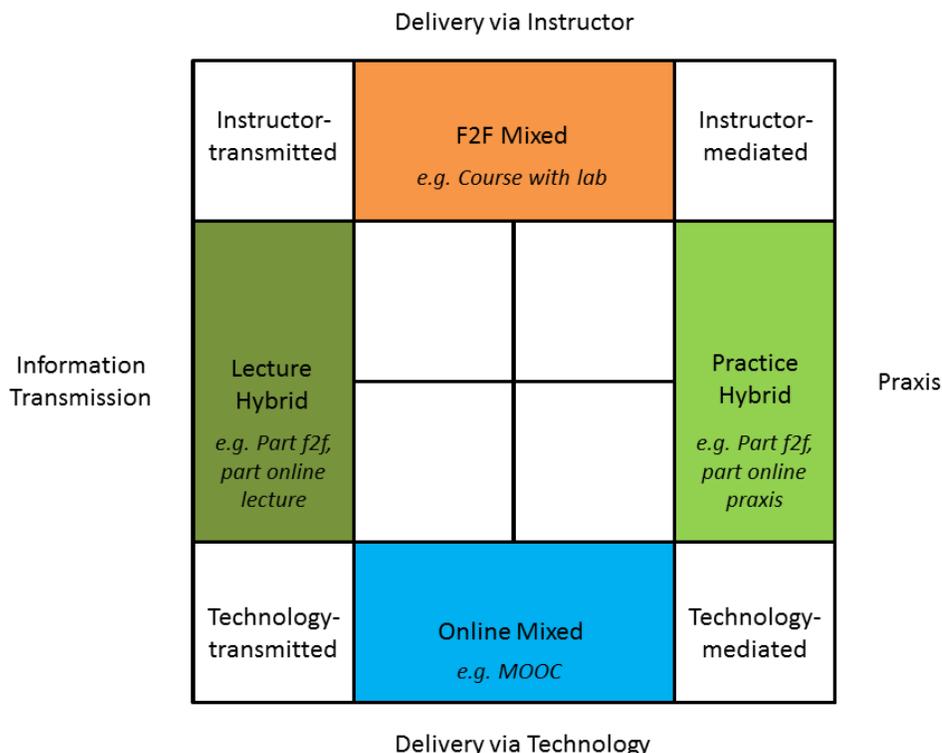


Figure 5. Combined learning experiences include a substantial portion (25% to 75%) of methods from two adjacent fundamental learning experiences.

*Lecture hybrid* describes the combination between instruction-transmitted and technology-transmitted experiences. In lecture hybrid courses, the student receives information partially via an instructor and partially via technology. In the examples below, information is being transmitted to the students via both delivery media. For the technology-delivered portion, sometimes students watch the delivery synchronously (i.e., live lecture), and sometimes they watch it asynchronously.

Example Chemistry Class	Example History Class
Students listen to live lectures sometimes face-to-face and sometimes online.	Students attend class once a week to listen to the instructor lecture, and the rest of the week, they watch videos.

*Practice hybrid* describes the combination between instructor- and technology-mediated experiences. In practice hybrid courses, the student applies knowledge with guidance and feedback partially via an instructor and partially via technology. In the examples below, students apply knowledge with feedback via both delivery media. For the technology-delivered portion, sometimes students receive feedback from a program, and sometimes they receive feedback from their instructor virtually.

Example Chemistry Class	Example History Class
Students attend lab once a week to conduct experiments. Then, they participate in discussions in online forums that the instructor moderates.	Students use an intelligent tutoring system to build problem solving skills. In class, students solve large problems as a group.

To the authors' knowledge, there is not a common term to describe courses that combine information transmission and praxis. In this taxonomy, the term mixed will be used to describe these experiences. *Face-to-face (F2F) mixed* describes the combination between instruction-transmitted and instructor-mediated learning experiences. In F2F mixed courses, the students receive information from and apply knowledge with guidance from an instructor. In the examples below, the students receive information from the instructor then apply their knowledge while the instructor is available to provide guidance and feedback.

Example Chemistry Class	Example History Class
For part of class time, students watch demos of procedure, and during the other time, they work on a lab assignment.	For part of class time, students listen to the instructor lecture, and during the other time, they discuss readings and ideas.

*Online mixed* describes the combination between technology-transmitted and technology-mediated learning experiences. In online mixed courses, the students receive information from and apply knowledge with guidance from technology. In the examples below, the students use technology to receive knowledge and receive feedback while applying their knowledge.

Example Chemistry Class	Example History Class
Students watch demos selected by the instructor, and they use an online lab simulation to work on lab assignments and get computer-generated feedback on their work.	Students watch videos selected by the instructor, and they participate in discussions in online forums monitored by the instructor.

### The Blended Learning Experiences

The middle of the taxonomy is called the blended learning experience, and it uses a substantial portion (between 25% and 75%) of delivery via an instructor, delivery via technology, information transmission, and praxis (see Figure 6). We chose blended to represent this area in the taxonomy because of how the term flipped is used in the literature. Flipped is indistinguishable from inverted in the literature, but this paper uses flipped because it is more common. A flipped classroom is generally considered to be a type of blended learning (e.g., Johnson, 2012), and central to its definition is how different types of instruction are delivered to students (see Table 2). Given flipped classes are a type of blended classroom, then other types of blended learning should also be defined by both how instruction is delivered and what type of instruction students receive.

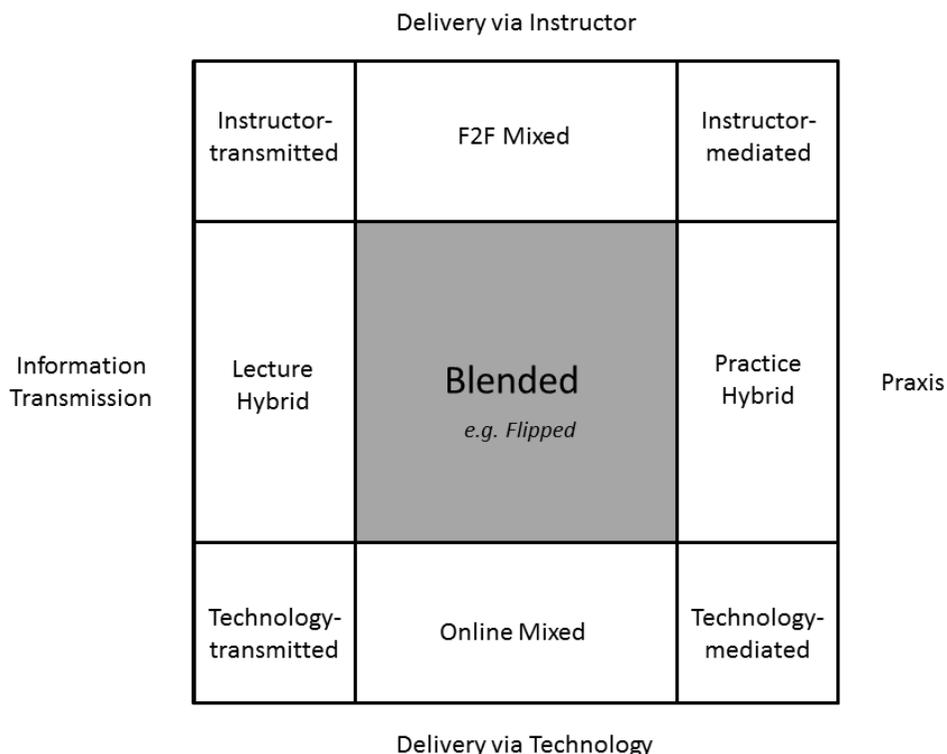


Figure 6. Blended learning experiences include a substantial portion (25% to 75%) of teaching methods from both delivery media (i.e., delivery via instructor and delivery via technology) and both instruction types (i.e., information transmission and praxis).

There are many possible types of blended courses that can be defined by the taxonomy by blending the fundamental technology (i.e., technology-transmitted) and apply knowledge with help from an instructor (i.e., instructor-mediated). For another example, a course would be considered blended if it were any combination of the combined learning environments. Types of blended learning are not included in the current nomenclature of the taxonomy, but they can be defined, like flipped has been, using terms from the taxonomy.

**Conclusion**

Given the number of papers evaluating hybrid, blended, flipped, and inverted classrooms (e.g., there were 10 papers on flipped/inverted classes at the American Society of Engineering Education conference in 2013 alone) and the inconsistent use of terms in the recent literature, a

and combination learning experiences. For example, flipped classes are those in which students receive content from taxonomy for courses is necessary. The proposed Learning Experiences Taxonomy (see Figure 7) aims to provide consistent terms for those discussing different types of courses. Although the impetus for the taxonomy was to differentiate hybrid, blended, flipped, and inverted classes, the scope of the taxonomy includes other types of courses. The definitions used in the taxonomy took into consideration previous definitions from the literature, so implementing these definitions should not cause undue confusion. Although detailed descriptions of a particular course in a study will always be necessary in the literature, classifying courses by the terms used in the taxonomy can help researchers and practitioners find information about specific types of courses.

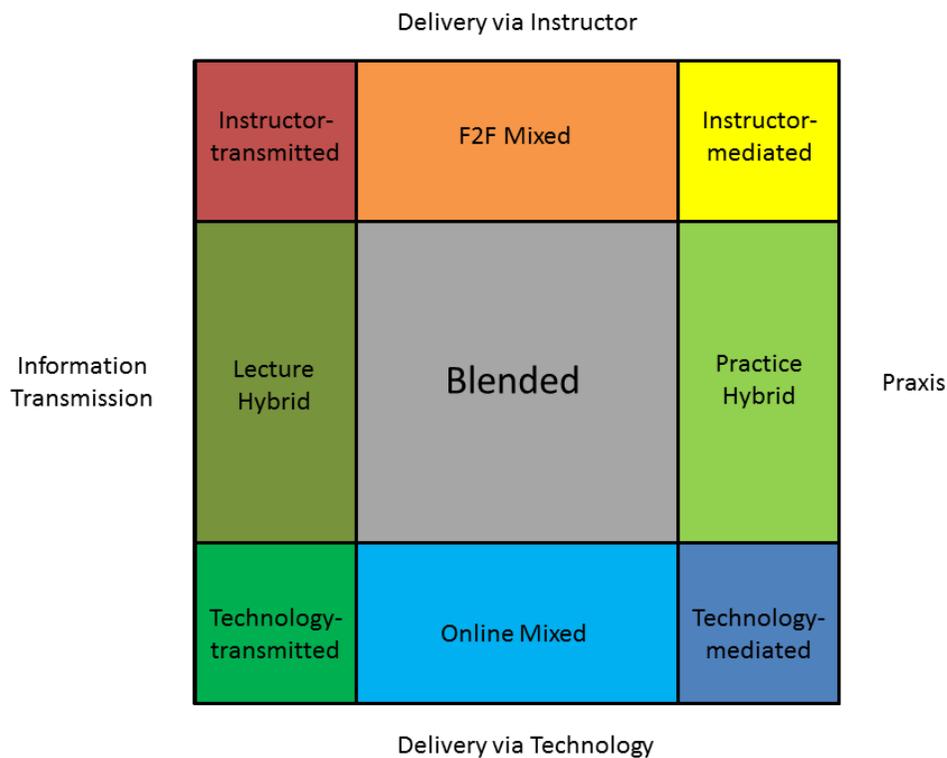


Figure 7. The Learning Experiences Taxonomy provides terminology to consistently categorize courses in which students have guidance via an instructor or technology.

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# Investigation of Adult Learners' Social Presence in an Online Learning Community in MOT program

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**Abstract:** This research investigated adult learners' social presence in an online learning community using the group memory support system(GMSS), which can show the passes of learners' comments clearly and systematically. The purpose of this study was to find the aspects to promote online discussions for busy adult learners from the aspects of online social presence. This study found that providing opportunities to express their ideas freely was important.

## INTRODUCTION

Busy adult learners are often introduced an online learning environment because of its advantages that allow a flexible learning environment without limiting time and space. Specifically, effective online communication is a key for adult learners. An online learning environment should not only be

sharing simple information each other. Rather, high quality discussions should be designed and well implemented. Recently, the importance of higher order cognitive activities such as meta-cognition or social cognition are discussed as a framework for promoting learning transfer. Learning transfer is that one can apply what one learned to another situation or other context. If learners participate in quality discussions that affect one's higher order cognitive activities, learning transfer may occur. Quality discussions can be related to foster social presence.

Social presence supports the social cognition for understanding the others and society in social psychology and it is referred to as one of the factors which promote an interaction with the others. However, how to foster social presence has not been well investigated. In this research, the practice result of GMSS was analyzed from a viewpoint of support of social presence, and it aimed at clarifying a method to foster of social presence.

### Literature Review

The theory of social presence had its inception through the research of social psychologists Short, Williams, and Christie (1976), although other researchers would say that it could be traced back to Mehrabian's (1969) concept of immediacy (Rourke, Anderson, Garrison, & Archer, 2001). Mehrabian (1969) described immediacy as "communicative behaviors that enhance closeness to and nonverbal interaction with another". The concept of immediacy and social presence are closely related and are often used interchangeably in the literature (Thurlow, Lengel, & Tomic, 2004).

According to these authors, social presence refers to the "ability of the community of inquiry participants to project themselves socially and emotionally, in all aspects of their personality, through the communication media that they use" (Garrison, Anderson, Archer, 2000, p. 94). Garrison and Anderson (2003) link "social presence" to three main categories of collaborative interactions. Each of these refers to specific indicators. (Table 1)

Table 1. Categories of social presence and indicators (Garrison and Anderson, 2003, p. 51)

<i>Interaction Categories</i>	<i>Indicators</i>
Affective	Expression of emotions; sense of humour The telling of personal anecdotes
Open communication	Holding up the main thread of the communication; respect of others; explicit reference to messages from others; expressing agreement with other or the content of their messages

Cohesive	To address or refer to others by their first name; to address or refer to the group by using inclusive expressions, the writing of salutations
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Figure1. Visibility of argument by GMSS

## METHOD

### Research Question

The research question is what the important elements are to foster social presence for the learning transfer.

### Settings

Tokyo Institute of Technology Graduate School of Innovation Management has been offering Management of Technology Program for adult learners since 2009. This is a non-degree program that expects adult learners to recognize the importance of learning and continue learning as an autonomous learner think about their career. There are 12 courses offering for one year and 8 courses for 6 months.

Two of them are lecture format and 5 of them have online discussions after the lectures and other 5 courses provide simulation tasks. Five courses included face-to-face sessions two to four times. It was about 4 to 8 hours. Since most learners have a job in various fields, spending time together to do a group work project was not easy for busy adult learners in a classroom. Thus, this program provided an online discussion system such as Group Memory Support System(GMSS), which can show the path of learners` comments clearly and systematically. This system was developed to promote effective online discussions for adult learners (Higa & Yamazaki).

### GMSS System

GMSS is a unique system that shows the links among threads very clearly and systematically. The discussion points are easily recognized and relationships among the learners' ideas are clearly indicates (see,Figure1). Each thread indicates thread number, a label of message type, and author's subject. When a learner posts his idea, he needs to select a message type that is appropriate for the idea and/or whose opinions are related. There are two message categories such as opinion and comments. In the category of opinion, there are 7 types of labels, such as (1)suggestion for the discussion topic, (2)new idea, (3)related idea, (4)constructive idea, (5)blended idea, (6)selecting idea, and (7)decision. In the category of comment, there are four types of labels such as (1)agree, (2)disagree, (3)add, (4)question, and (5)reply.

Table 2. Types of Message in Opinion Category

Message type	Explanation
suggestion for the discussion	Suggest discussion topics to others to initiate a new discussion
new idea	Suggest a new opinion without referring to other opinions
related idea	State an opinion that related to other opinions
constructive idea	State a constructive opinion based on others
blended idea	State a blended idea that combined other ideas.
selecting idea	State an opinion that selecting one of te ideas.
decision.	State an opinion about decision

Table 3. Types of Message in Comment Category

Message type	Explanation
agree	State a comment to agree with others.
disagree	State a comment to disagree with others.
add	State an additional comment to other comments
question	State a comment to ask something to other comments
answer	State a comment to answer to a question



Figure1. Online forums in GMSS

### Data Collections & Analyses

The data were collected from the learners' threads online discussion forums that used GMSS in 5 courses in 2011 and through the questionnaire. There were 17 students participated in this program and 16 students answered the questionnaires.

The following observed variables were used for the learners' threads.

1. The number of discussion threads about an assignment.
2. The number of discussion threads for a free topic forum such as self-introduction etc.
3. The number of discussion threads for questions or comments that were posted more than twice for a topic.

If these observed variables are high, the social presence could be fostered. Thus, this research investigated what are the important element to foster social presence.

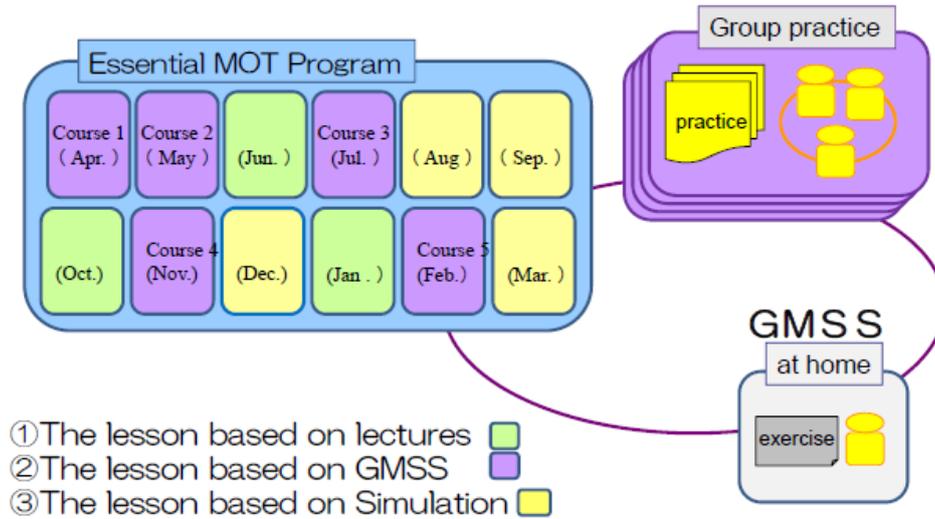


Figure2. 5 courses in 2011

In this program, the expected learning outcomes were whether or not adult learners were motivated to learn continuously as an autonomous learner to be able to enhance their career rather than passing a test or report. Thus, the questionnaires were used to collect the data after the course.

The questionnaires were developed based on the elements of ARCS model (Keller, 1987), because the elements of ARCS model are used to motivate learners and the goals of MOT programs are well matched. Each item was measured using a five-point likert scale.

Table 2. The questionnaire about learning transfer

A	Are you interested in the theme of the course?
R1	Do you continue to studying the theme of the course?
R2	Do you think that what you learned in this course could be helpful?
C	Did you gain confidence by learning this course?
S	Were you satisfied with the course?

## FINDINGS

### Results

The results of collected data through the questionnaire were shown in table 3. Learning experience

in MOT seems to help them to have an intention to continue learning.

Table 3. The result of a questionnaire about learning transfer

	A	R1	R2	C	S
Mean	3.63	4.17	4.11	3.98	4.10
Variance	0.08	0.12	0.14	0.11	0.08

The table 4 shows the number of threads of the observed variable 1 and 2, which are the number of threads about assignment and free topics.

Table 4. The number of messages for every subject

	observed variable1	observed variable2
Course1	404	13
Course2	92	49
Course 3	88	8
Course 4	67	4
Course 5	126	10

Table 5 shows the number of threads classified based on each hierarchical layer about an assignment.

Table 5. The number of threads classified based on each hierarchical layer about an assignment

	0	1	2	3	4	5	6 or more
Course 1	9	57	68	66	49	38	104
Course 2	6	25	6	2	2	2	0
Course 3	4	20	24	14	9	6	3
Couse 4	4	16	16	13	6	3	5
Course5	7	22	25	20	14	11	17

Table 6 shows the correlation coefficient of learning transfer and observed variables. Learning transfer and observed variable 2 (free topics) was 0.56. The observed variable 2 had high correlation with R1 (continuing study). Observed variable 1 (threads about an assignment) and Observed variable 3 (over twice for a topic) had a weak correlation.

Table 6. The correlation coefficient of learning transfer and observed variables

	A	R1	R2	C	S
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observed variable1	-0.88	0.14	0.17	0.18	0.21
observed variable2	0.31	0.49	0.56	0.43	0.68
observed variable3	-0.61	0.20	0.22	0.25	0.11

### Discussion & Conclusions

This study investigated the adult learners' social presence in online discussion forums in the GMSS using three observable variables. The data showed that the values of the questionnaire about learning transfer moderately had correlation with the observed variable2. Although this study used three types of observed variables and analyses of discussion threads, free topic discussions had higher correlation rather than the threads about an assignment.

Thus, in order for adult learners to foster social presence using GMSS, providing the opportunities for learners to express their ideas or their interesting topics is the key element. In addition, stating related ideas, statement of disagree and questions to others are also important.

Although this research is very limited, one insight may be suggested for busy adult learners to participate in online discussions.

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# Use PISA-based Assessment Problems for Teachers' Professional Development in a Japanese Middle School

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**Abstract:** This work-in progress research is to suggest using PISA-based assessment test for teachers' professional development in the Japanese middle school, who specifically teach Sogo course (Integrated Study Course). This presentation briefly includes background issues in the course and presents how the course was implemented in one middle school. Finally, the suggestions will be made how the results of the pilot study should be used for teachers' professional development.

## Introduction

This is a work-in-progress report of conducting assessment method of problem solving skills of the Japanese middle school students in order to use teachers' professional development. The report introduces the background issues of Japanese education, and efforts to improve the skills in middle school based on the policy enforced by the Ministry of Education, Culture, Sports, Science and Technology (MEXT). This paper suggests a plan to conduct assessment test for teachers to recognize students' abilities or skills in order to use the results for the course improvement.

It has often been pointed out that Japanese students tend to lack problem-solving skills and applied skills, because of the style of coursework in current Japanese education. Traditionally, in the Japanese education system, students memorize information to gain concrete knowledge rather than developing problem-solving skills by identifying problems and searching for solutions.

In response to this problem, in 1998, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) of Japan implemented the Integrated Study Course little by little, which is now taught in elementary, middle, and high school. The goal of the course is to have students gain problem-solving skills and abilities. The course objectives are that students should develop problem-solving skills and abilities by finding a problem, learning, thinking, and judging the possible solutions by themselves across each subject course; gain the skills of how to learn and how to think; and think about real-life issues by engaging in problem-solving and investigational activities voluntarily, creatively, and collaboratively.

In fact, since 2000, the Organisation for Economic Co-operation and Development (OECD) has run the Program for International Student Assessment (PISA) every three years, for students aged 15. The evaluation assessed Japanese students' knowledge and skills at the international level, and the results indicated Japanese students lagged behind in literacy skills, such as retrieving information or comprehension skills. To address this problem, in 2005, MEXT provided guidelines and materials for teaching plans, with examples, aimed at improving students' literacy skills (MEXT, 2005).

## **Purpose of This Work-in Progress Report**

The purpose of this report is to discuss a possible way to assess students' abilities or skills in real life issues regularly and use the results for professional development showing the case of a particular middle school. This will allow the teachers to better implement the regular coursework and as well as the Period of Integrated Study Course which specifically work for the practical knowledge in real life based on the assessment results. Sharing work-in progress report could bring a chance to reconsider what could be the better way to complete the plan. Furthermore, the issues and evaluation methods described here can contribute toward a better course curriculum or improvement plans for other Japanese middle schools.

## **Efforts in the Period of Integrated Study Course in a Middle School**

At the middle school that introduced in this project, the Period of Integrated Study Course was held for a total of 50 hours in the seventh grade and 70 hours in the eighth and ninth grades, respectively, in an academic year. The Period of Integrated Study Course had been introduced slowly to the school since the new curriculum guidelines were issued in 1998. The current curriculum has been used since 2008.

A course supervisor developed all the curriculum and course materials for the three grades. The lesson topics are shown in Table 1. The topics included various fields so that students would gain practical skills for real life. The homeroom teachers such as taught the course based on the course plan, using the course materials developed by the course supervisor. Although each lesson dealt with different topics, students were provided worksheets that they worked on throughout the course. For example, the students selected their own research topic, thought about it or researched it, and wrote down ideas and solutions. Moreover, they presented their work at a school festival. Finally, the ninth grade students wrote a graduation research paper.

## **Assessment Tool**

Using PISA problems are suggesting that the students' problem solving skills in real life, The PISA problems included practical and realistic materials. Arimoto (2006) described the seven features of PISA problems as follows: (1) The problems are practical in real life, (2) Practical figures and maps account for 40%, (3) The topics range from science to social studies, (4) Free description types of questions account for 40%, (5) Expressing your opinions is required, (6) Evaluating the text and criticizing it are required, and (7) Stating your reasoning using the provided information is necessary. Because of these characteristics of PISA problems, the assessment points are very different from those used in Japanese education. The PISA test is designed to evaluate students' skills or abilities to solve problems in real life.

## **Pilot Case Study**

This is a first step to see if the results of selected PISA problems can be helpful for the data for teacher's reflection to improve course design. The data collected in this pilot study are very limited and may not be sufficient to reach a firm conclusion.

The participants were 252 middle school students in Tokyo. They all attended the same middle school. In September 2012, 59 seventh-grade students, 92 eight-grade students, and 101 ninth-grade students took the paper-based test.

The test consisted of items selected from the PISA 2000 and 2006 questions in the literacy category. The seventh grade students answered 16 questions from 4 topics. The eighth and ninth grades answered 14 questions from 4 topics. Three topics were the same for all students. The answer sheets were checked and graded by the researchers based on the evaluation manual (National Institute for Educational Policy Research, 2010). The test results of the three topics that all students answered were analyzed by grade level to identify the differences. The test results of the four topics taken by each grade level were also compared to identify any differences among the individual classes.

Table 1 *Lesson Topics in the Integrated Study Course*

	Seventh grade		Eighth grade		Ninth grade
1	Problem-solving study for field work	1	Problem-solving study	1	Problem-solving study
2	Problem-solving study	2	Media literacy	2	Media literacy
3	Media literacy	3	Volunteer experience	3	Volunteer experience
4	Volunteer experience	4	Volunteer education	4	Volunteer education
5	Volunteer education	5	Library and reading instruction	5	Library and reading instruction
6	Library and reading instruction	6	Human rights education	6	Cardiac resuscitation
7	Human rights education	7	Visiting workplace	7	Human rights education
8	Visiting workplace	8	Dietary education	8	Information literacy
9	Dietary education	9	Information literacy	9	Information moral
10	Information literacy	10	Information moral	10	Visiting higher education schools
11	Information moral	11	Outside teacher lecture	11	Research related to the school trip
12	Outside teacher lecture	12	Career education	12	Public service education
13	Career education	13	Environment education	13	Lecture by high school teacher
14	Environment education	14	Life education	14	Career education
15	Life education	15	Problem-solving study	15	Environment education
				16	Life education

## Results

The accuracy rate of each problem is shown by grade in Figure 1. Each grade had a similar accuracy rate on each problem. However, the accuracy rates of higher grades were mostly higher.

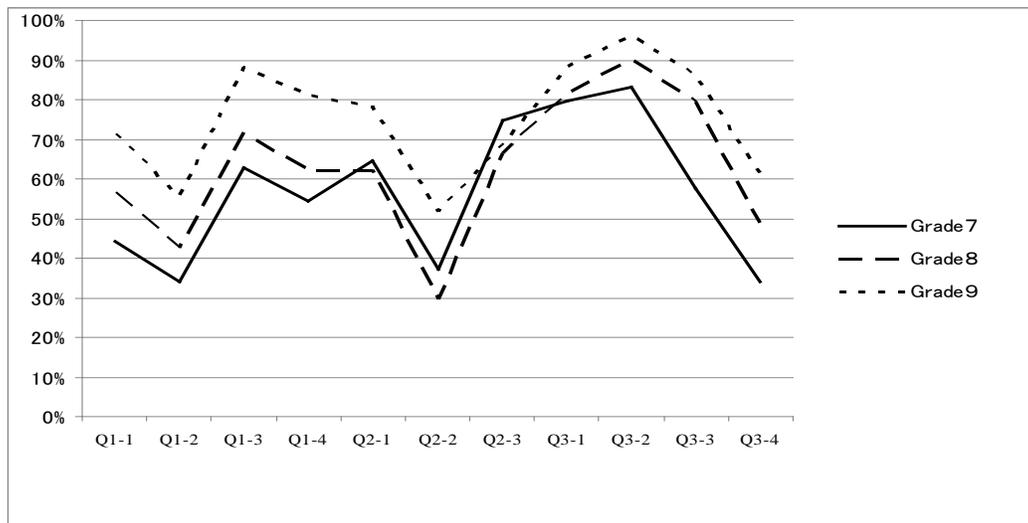


Figure 1. Accuracy rate of each grade by problem.

Next, Figure 2 shows the accuracy rates of the seventh grade students. The accuracy rates of Class 2 were higher than those of Class 1 for each problem. The average scores of Classes 1 and 2 were 5.5 and 10 respectively.

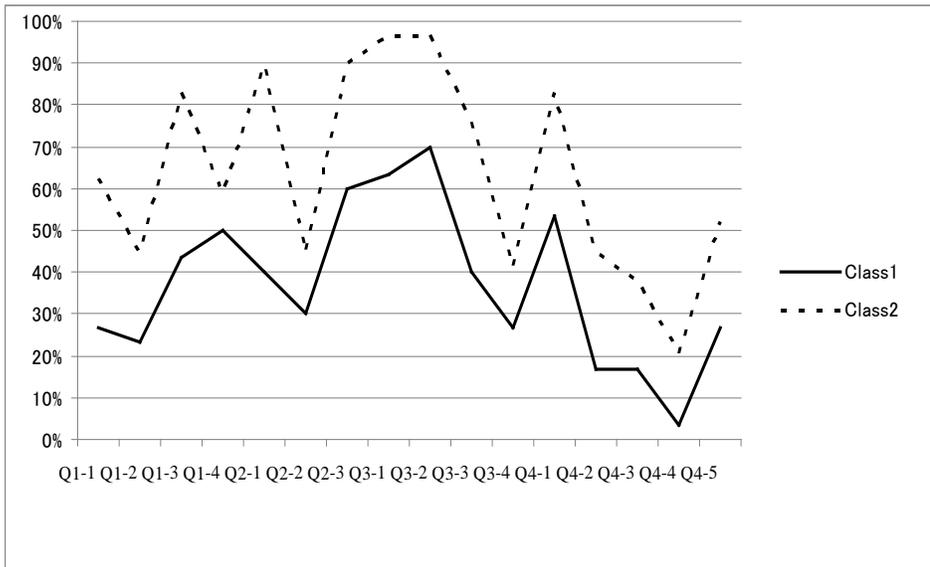


Figure 2. Accuracy rate of seventh grade students (classes 1 and 2) by problem.

Figure 3 shows the accuracy rates of the eighth grade students. The accuracy rates for the three classes were very similar. The average scores were 8.3, 8.1, and 7.9 for Classes 1 to 3, respectively.

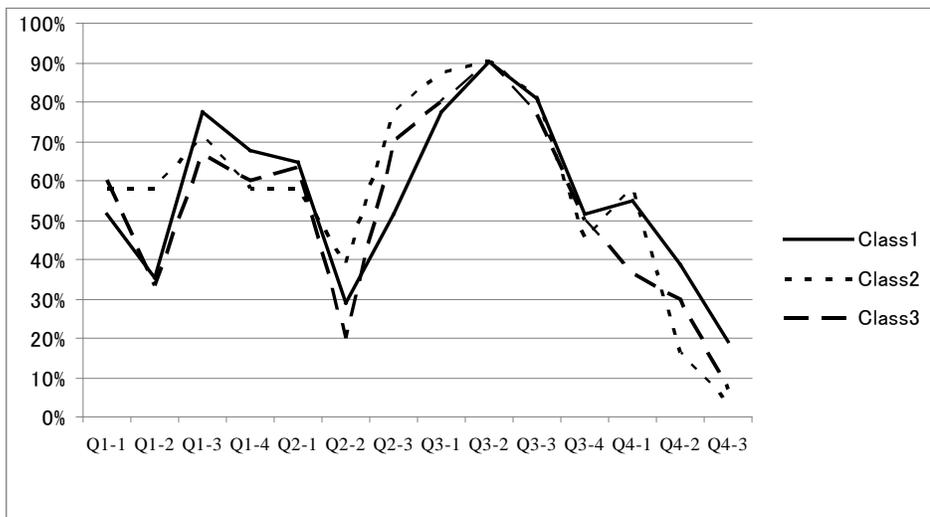


Figure 3. Accuracy rate of eighth grade students (classes 1, 2, and 3) by problem.

Figure 4 shows the accuracy rates of the ninth grade students. The accuracy rates were very similar among the three classes. The average scores were 9.4, 9.8, and 9.4 for Classes 1 to 3, respectively.

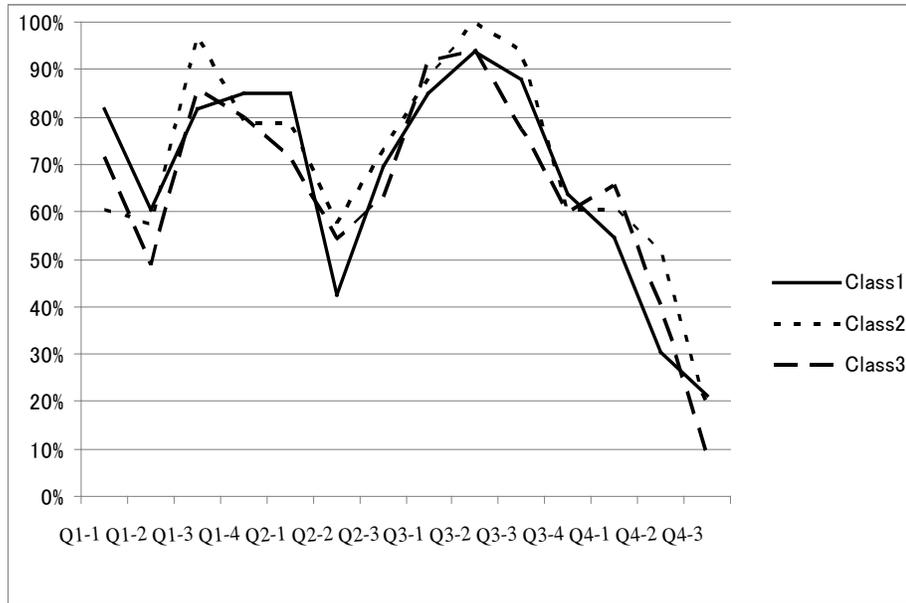


Figure 4. Accuracy rate of ninth grade students (classes 1, 2, and 3) by problem.

As described, the accuracy rates and average scores were better in the higher grades. Although the scores between classes were remarkably different for the seventh graders, the average scores of ninth graders were very close.

As the tentative results indicated, the higher grades had better test scores. By the time they took the test, the ninth grade students had spent about 150 hours in the Period of Study Course, while the seventh grade students had spent about 25 hours in it. The results suggested that the higher grades had higher abilities and skills.

## Discussion and Future Plan

The results of the seventh grade students suggested that differences may have existed in their skills in the beginning. Yet, their skills or knowledge improved by the ninth grade to some degree.

As the tentative results indicated, the score can be compared by grades or classes. Teachers are able to have an idea about their students' skills that should improve. Teachers or curriculum developer can be referred to the results to change their course or curriculum. However, the problems used in the test administered during the pilot study were very limited and may not have been sufficient for evaluating the students' true abilities and skills. Additionally, these types of skills or abilities may be related to their efforts in other courses or to human development. Furthermore, to examine the effectiveness of this course reliably, it is necessary to follow up on the students' skills and abilities. Yet, the results may be able to use teachers' professional developments

This report is the first step toward thinking about a better way to implement the course and evaluate students' skills to use teachers' professional developments. Next stage for this project is to establish teachers' reflection and examine how they think about the results and how they change the course.

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Of Buddhas, Vulcans and Hamsters—A Baker's Dozen Things (I Think) I Know About  
Teaching

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## **Abstract**

Teaching and learning are mysterious. Education research has been criticized for being granular, anecdotal, lacking foundational theory, and applied to the wrong questions using the wrong methods. The advent of online teaching sparked a frantic blizzard of ideas, opinions and research to distill best practices not only online but in the classroom. The field of instructional systems design seeks to scientifically ground instruction to achieve predictable, measureable and consistent learning outcomes, primarily for corporate and military learners. This powerful mix of cultures, worldviews, and emerging technologies has distilled out admirable tools and techniques as well as assessment rubrics for distance learning courses. While there is no question that online courses and pedagogy have improved significantly in a relatively short time, the aim of a unifying, theoretical approach to online course design, delivery and evaluation is not always realized. This is the theme in the recent article, *The Buddha's Distance Learning Consult* (Hopper, 2012), which attempts to reveal the bedrock level silliness inherent in trying to match cookie cutter course templates to master teachers. This article proceeds from that point to offer a baker's dozen insights, admittedly anecdotal, based on a long career of teaching with and without technology.

## **Of Buddhas**

Master teachers, the true exemplars, often use(d) unconventional methods such as parables, koans, storytelling, dialogue and even various physical prompts and privations. Consider Jesus, Socrates, Plato, Anne Sullivan, Confucius, Aristotle and, of course, the Buddha. Which of these would successfully adapt their teaching style to the detailed online course design rubric of the contemporary online course? This is not to say that there is no value in employing specific tools, techniques and best practices for online courses in the general sense. But as the harried instructional designer in the Buddha article discovers, it may be he who has something to learn about teaching and trying to adapt a teacher of highest caliber to a learning management system may be a humbling exercise.

## **A Baker's Dozen**

As a professional instructional designer, I wish that I could recommend teaching strategies that worked for all learners, in all subjects, at all times. We achieve modest success for systematic training in the workplace but not in education. Contemplating the differences that would be found between sex education and sex training easily makes the distinction. But, perhaps thankfully, the mystery of teaching and learning has not been resolved in a universal way. Jonassen (2003) was right that there is no unified theory of the teaching and learning enigma. But this is the very thing that makes teaching worthy of a life's focus and work. Even

instructional design theorists of the highest order acknowledged that simply observing expert teachers reveals effective strategies, anecdotal or not. The following is this author's short list of best insights and strategies in exemplary teaching. I make no distinction between teaching with or without technology.

### 1. Teaching Doesn't Matter

Learning matters. Without learning there is no teaching. Your greatest, smoothest, most brilliant lecture or other instructional event is of no consequence in and of itself. Its worth is in learning outcomes. Great lectures are admirable and often inspirational, at least temporarily—like some sermons. But as Dewey (1933) explained long ago, a student who has truly learned can do something they were not previously able to do. That must be our measure.

A prime example of “the proof is in the doing” is the body of work by medical measurement leader Christine McGuire (2005, p. 73), who bluntly stated, “...if you want to know can someone do something, ask him (to do it).” McGuire boldly pointed out that assessing the readiness of a doctor to doctor by giving them a multiple-choice exam on biochemistry is silly.

### 2. Of Hamsters—Learning is Mysterious

Education is not a research-based practice for either teachers or administrators. Education research has earned a dismal reputation (Kaestle, 1993). Teaching may be most generously considered pre-science and most critically as pseudoscience (Reeves, 1995). Teachers base their methods on anecdotal “evidence” (such as this article), which is idiosyncratic and even political. Unlike the field and discipline of instructional design (Smith & Ragan, 2005), which earnestly seeks to link cognitive science and learning, the field of education does not.

The visual metaphor that comes to me as I peek into overfilled classrooms in my world, students in various caricature poses of dismay or boredom, is the bulging face of an overstuffed hamster. Teachers continue to shovel in content until the lecture period ends, often unaware (or unconcerned) that attention spans and short-term memories are exhausted.

### 3. Of Vulcans—Knowledge Transfer is a Myth

Transmitting information is not teaching. Absorbing information is not learning. The visual metaphor of *Star Trek's* First Officer Spock performing the Vulcan mind merge is powerful. But it does not ring true in authentic teaching and learning. The software analogy of installing computer software is false for human learning.

“Learning...is a process of meaning making, not of knowledge reception.”  
(Jonassen, 2002)

I consider Jonassen's quote to be among the most eloquent and incisive insights in the realm of education and training. A major factor in the parade of technology-mediated teaching failures seems to be a fundamental misapprehension of what knowledge is, and therefore, what learning is. Memorizing and regurgitating facts, which we tend to do a great deal of in our collective educational experiences, does not result in true knowledge because:

- It evaporates quickly
- It does not prepare the "learner" to DO anything

We know very well that passive absorption of "knowledge" simply does not work yet we continue focus our effort and investment in machinery to more efficiently distribute data. The proper use of most communications technologies is to serve as "cognitive tools" (Jonassen & Reeves, 1996) to help the learner solve the problem, not to deliver a canned solution to memorize and forget.

#### 4. Learning is (Still) Work

And the learner does it. We can watch. We can encourage. We can offer guidance. We can point to our own learning. But ultimately the onus is on the learner alone and our measure must be of a student's newly acquired ability to do something—preferably something useful. Teachers cannot do the work of learning for another human mind, nor can technology (see item 8 below). The Hopper theory of learning:

"Get them to roll up their sleeves and grapple with it."

#### 5. Good Teachers Clam Up

Appreciating that knowledge absorption and regurgitation is not learning, some teachers elect to make seemingly radical changes in teaching style.

"I've decided to stop talking and start teaching." Dr. Betty Oliver, Professor Emeritus, Southern Polytechnic State University

Soon after earning tenure, Dr. Oliver made this startling announcement in a matter of fact manner that conveyed a deal of thought behind her decision. Indeed it had. She filed away her lecture notes, PowerPoint files and canned classroom exercises. She started afresh, sometimes going to class with just a notecard of learning outcomes and ideas. She put the students to work. She literally adopted a "guide on the side" teaching philosophy and patiently waited out the inevitable student resistance and resentment. Until retirement she never changed back to a lecture style teaching approach. Her discipline is art and design and her expertise assured her that her decision had been the right one.

## 6. Courage!

A significant move away from the familiar “chalk and talk” teaching style is risky. Students tend to resist and object. Administrators may be lukewarm. Dr. Oliver waited this period out and in due course students were lining up and administrators were gushing over her results—some even signed up for her courses. She sums up her experience with the following quote from a course evaluation:

“This was the worst course ever. The instructor did not teach us at all, would not give us the answers, and left it all up to us. Even so, thanks to my own efforts, I learned more in this course than any course I ever took!”

This was precisely what Dr. Oliver wanted to hear. But teaching insight was only part of her recipe for success. The other primary ingredient was courage.

## 7. Good Teachers Share

We too often hear professional teachers begin a presentation or a meeting with the hackneyed phrase, “You know how teachers love to hear themselves talk!” It might be funnier were it not so.

In my own teaching career, a good bit of it in health professions, I observed teachers who seemed to leap between students and their insights. But consider your own time as a student—do you best recall the things you discovered or solved by yourself? The best teachers do not cheat students of the joy and pride of “figuring it out” for themselves. They are patient; sometimes almost brutally so. They hold back and give the student a time in the limelight.

Good teachers also share their own humanity, and that includes the reality that they do not have all the answers. But this can be a starting point for sharing the way the teacher has learned to go about creating meaning and accumulating knowledge. Giving a student something of a track record in resolving their own learning needs is a terrific gift.

## 8. Technology is a Liar

Thomas Reeves (1999) long ago described the “big technology lie” that technology will make learning fast, easy and fun. Yet we continue to seek this elusive magic, and vendors continue to use these very terms. Credible educational technology programs ceased media comparison studies fifteen years ago. Yet the field of education continues to conduct them and permit graduate students to continue this futile research direction. Three decades later, Clark’s (1983) admonition still rings true, “No credible evidence that any medium (or combination of media) increases learning that is not explained by other factors.”

## 9. Your Students are Good Typists!

Our students wander the hallways and enter the classrooms with mobile technology in hand. This leads us to believe that the present generation of students is good with technology. But as we noted elsewhere, “Social networking technologies are attractive to undergraduates for potent hormonal reasons that we cannot match with any sort of technology mediated instruction.” (Hopper & Hendricks, 2008, p. 15) They may be remarkably good typists but my contemporary experience on an engineering campus persuades me that current students are not competent in technology fundamentals such as word processors and spreadsheets, their own opinions notwithstanding (Hopper & Rainey, 2003).

Educational luminaries decree paradigm shifts in education at the foundational level. Dede (2007) waxes poetic in his introduction to the 2007 ECAR (Educause Center for Applied Research) study of undergraduate students and information technology (Salaway, Caruso, & Nelson, 2007), quoting Shakespeare to describe the beginnings of a “sea change” in technology applications related to teaching and learning. I simply cannot see a “sea change” evidenced in the ECAR study report or data, which indicates to me that undergraduate students have passionately embraced social networking Internet technologies, online entertainment video, and a blizzard of communications gadgets. But the data say little about actual instructional applications and shows a decided student preference for “moderate technology use” by skilled instructors in their college courses.

## 10. Good Teachers Are (a Lot) More Important Than Technology

“Any teacher who can be replaced by a computer should be.” Arthur C. Clarke, 1980

Technology has spread panic in administrators and faculty in wave-like fashion since introduction of the Apple IIe microcomputer (Hopper & Hendricks, 2008). All in all, the impact of technology in education over time has been gradual and slight (Cuban, 2003). While we ought to be “sniffing the wind” as flagship universities weigh in, there is no need for panic. Yet. The dismal record of course completion in the current MOOC mania proclaims the worth of good teachers, with or without technology. We are not close to a true adaptive teaching technology and the intuition, experience and savvy of expert teachers remains in short supply.

## 11. Good Teaching is Good Teaching

My own (dusty) doctoral research centered on finding and analyzing exemplary online courses at a time when online teaching was new and my blood boiled with the potential I perceived in teaching with technology. But I came full circle back to the planks of expert traditional classroom teaching, the very ones that the old masters have expounded for generations (Hopper & Harmon, 2000):

- Learning by doing
- Abundant, rapid feedback
- Judicious, conservative use of technologies

Chief among the prescriptions for effective teaching, online or not, would be the well known work of Chickering and Gamson (1987), that good practice in undergraduate education:

- encourages contact between students and faculty,
- develops reciprocity and cooperation among students,
- encourages active learning,
- gives prompt feedback,
- emphasizes time on task,
- communicates high expectations, and
- respects diverse talents and ways of learning.

These authors revisited the original set of seven principles, applied to technology, without major revision (Chickering & Ehrmann, 1996).

## 12. What You Do is Important

We cannot spare you. Your knowledge, skill, experience and dedication are not easily replaced. But you are human. You cannot give your learners what you do not have. Human brains need down time. Conferences in Hawaii are not luxuries—they are precious opportunities to refresh, recharge and get back to business.

## 13. You (Still) Deserve Respect

Persistent dotting attitudes of helicopter parents looking after their special snowflakes notwithstanding, you have a reasonable expectation to be treated with respect. You should insist. To do otherwise cheats yourself and cheats your learners of a role model of a serious professional who requires respect.

## Conclusion

If we had all the answers teaching wouldn't be fun and exciting anymore and we would not need conferences in Hawaii. Thankfully there is room for imagination, creativity and personality in professional teaching. My baker's dozen top teaching insights are not exhaustive and may overlap little with those of other teachers with greater skills. I encourage the reader to look around at the great teachers in your own world, at your own teaching wisdom, and compile a baker's dozen of your own. My guess is that it will be difficult to constrain your accumulated teaching wisdom to a list of thirteen.

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Mail Call!: The “War Letters Project” in Action in the Classroom

Social Studies Education; Cross-Disciplinary Education

A Report on An Issue Related to Teaching

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Description: This report describes a new vehicle in Social Studies and English Education, Andrew Carroll’s War Letters Project. His query to “Dear Abby” resulted in the public’s contribution of more than 90,000 letters exchanged between military personnel and their families during military conflicts ranging from the American Revolution until Iraq. This is a new approach for teachers to illustrate the emotions and thoughts of the lives of military personnel and their families.

Abstract:

Educators of History and Social Sciences are constantly seeking new ways to provide their students with different perspectives and a greater understanding of the events of the past. While certain events in United States History, such as the American Revolution, the Civil War, and World War II, are ubiquitous and timeless subjects, a new way of making the people whose lives were affected by these domestic and international conflicts has been unearthed.

In 1998, Andrew Carroll created the War Letters Project, in which he sought to create a repository of the letters exchanged between service members and their families during domestic and international conflicts. His query to “Dear Abby” resulted in the public’s contribution of more than 90,000 letters exchanged between military personnel and their families during conflicts ranging from the American Revolution until Iraq. This is a new approach for teachers to illustrate the emotions and thoughts of the lives of service members and their families.

Significant letters were authored by John Steinbeck, Ernie Pyle, General George A. Custer, General John “Black Jack” Pershing, Theodore Roosevelt, General George S. Patton, Douglas Fairbanks, Jr., George McGovern, General William Tecumseh Sherman, General William Westmoreland, General H. Norman Schwarzkopf, and General Colin Powell. Other contributions to the collection that focused on diplomatic, social, and political difficulties of the period were written by Julia Child, John F. Kennedy, Richard Nixon, Alger Hiss, and Whitaker Chambers. Aside from these notable authors, many insightful contributions to the collection are made by ordinary citizens who reflect on the themes of honor, integrity, love, honor, peace, and reconciliation.

These letters, which are now housed at Chapman University in Orange, CA, provide a rich collection of materials for researchers, educators, and the public at-large to learn more about

the everyday lives and concerns of the service members and families of those who served in armed conflicts on behalf of the United States. A live dramatic performance entitled, “If All the Sky Were Paper,” is now in development and scheduled to be performed on stages nationwide, giving this project multiple potential applications for educators.

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**WORKSHOP PRESENTATION**

**1. Title of the submission:**

I Choose C: Learner-Centered Strategies to Promote Engagement in the University Classroom

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**6. Abstract**

As the Common Core standards are being implemented across the country, the hope is that future students entering higher education will bring with them improved critical thinking and analysis skills. In order to meet the needs of these learners, it will be essential that the traditional teacher-centered model of university classroom instruction become more student-centered, providing the learners themselves with opportunities to become more actively engaged in the learning process. Attendees will have the opportunity to experience a small group discussion concerning their own teaching practices and ways they can move toward a more engaged style of instruction. The primary focus of the workshop is to provide participants with the opportunity to "model" a number of these basic classroom instructional strategies, designed to provide the learner with a sense of greater ownership of the content knowledge. Strategies to be modeled include cooperative learning, think-pair-share, the jigsaw, concept sorts, and semantic features analysis.

# **Facilitating Learning Inside and Outside the Classroom with Mobile Technology, Open Educational Resources, and Class Specific Apps – A Preliminary Study**

Wendy Noffke, D.C. and Loren Davis, M.Ed.

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## **Abstract:**

### **Background:**

In this project, our goal was to devise a strategy that would increase accessibility of quality learning materials in a variety of formats without the expense of textbooks and the LMS (Learning Management System).

### **Methods:**

Our pilot classes explored the use of the Kindle Fire and Apple iPads for a college level biology course and history course presented to both college students and high school students. A combination of flipped learning and blended learning was used in the course presentation, along with face-to-face laboratory activities. Along with the mobile devices, Google blogs and websites were used to impart information and classroom activities. Assessment was made using student surveys before and after participation and instructor feedback.

### **Results:**

This approach proved to be very cost effective. Students were actively engaged both inside and outside the classroom with increased flexibility for doing their studies. The instructor reported more effective use of class time for labs and increased efficiency in managing the course, especially over multiple quarters. Feedback from the students was positive.

### **Discussion:**

Information gathered throughout these pilots has proved useful in implementing additional use of technology to enhance both face-to-face instruction and distance education. It has opened options of using additional modes of instruction to enhance accessibility, increase comprehension, and positive feedback from students on the learning experience. It also helped to clarify some challenges to the campus and infrastructure to incorporate the further use of technology on a widespread basis.

## **Introduction**

The digital age has brought about many changes in our daily lives, not the least of which is the access to free open source information. In addition, digital innovations permeate the lives of students like never before. It is not uncommon for students to carry a smartphone and/or a tablet to school and go home to multiple devices that can access the internet. Educational institutions are exploring innovative ways to integrate digital technologies into the classroom. (1) E-learning tools used in cooperation with the traditional classroom support various learning style and educational media. (2) Our goals

in establishing the pilot programs discussed in this paper were to wed these two phenomena by merging mobile technology with open educational resources (OER). Using a “flipped classroom” or “blended learning” model we attempted to enhance student learning while providing cost effective alternatives to educational practices that are currently in place. (3) We will discuss the pilot projects that we implemented at Clover Park Technical College and Northwest Career & Technical High School over the previous two years, share the data that was collected, and discuss the direction that we currently moving based on our findings.

Clover Park Technical College (CPTC) is located in Lakewood, Washington and is part of Washington State’s community and technical college system. CPTC serves Pierce County and the South Puget Sound region. Northwest Career & Technical High School (NWCTHS) is a high school located on the campus of CPTC. High school students who are the ages of 16-21 enroll in high school, obtain a high school diploma, and receive career training. Many high school students opt to take college classes that will later apply to their college degree.

### **Pilot Class Development**

Our initial pilot project focused on a cohort of pre-nursing students who were enrolled at NWCTHS. Each student in this cohort indicated that they intended to register for Biology 175 from the college because it was a prerequisite class for later entry into CPTC’s nursing program. It was decided to offer a Biology 175 for these high school pre-nursing students. From the early planning stages, we agreed to use open source materials and facilitate learning through multiple modes of presentation on digital tablet devices. OER's are beneficial to students when they are used to promote learning activities that are “real, rich and relevant”. (4) The use of open course materials would not only provide significant cost savings to NWCTHS, but if successful, would be integrated into the existing college courses offered to CPTC students saving them the expense of purchasing a high priced textbook. According to a survey “by the US Public Interest Research Group, a nonprofit consumer-advocacy organization, seven in 10 college students said they had not purchased a textbook at least once because they had found the price too high.” (5)

In addition to the use of open educational resources (OERs) and digital tablet devices, the course instructor created both written and multimedia presentations which enabled students access to course materials both on and off campus in a blended learning approach. The blended learning model allows instructors to create their own adaptations and plan learning activities to take place before, during, and after class. (6) Student engagement is an important component of student learning. There is also the added benefit of reduced paper use and early intervention for students struggling in a course. (7)

Several mobile devices were considered as options. The devices would be purchased by NWCTHS and checked out to students in place of a textbook. At the time, the most well known models were the Kindle Fire and Apple iPad. While evaluating those and a few other models, we decided we wanted our information to be available across multiple platforms and not exclusively to one type of device. Factors taken into consideration were portability, speed and functionality, and cost. Given the options available at the time in 2011, we selected the Kindle Fire for our pilot. At a cost of approximately \$200 per student, the Kindle Fire was near the price of the textbook alone.

We selected a small number of free apps that would be useful for the course and

ensured the Kindle Fires were functional for accessing course materials, namely the presentations and handouts. Course materials were also presented on a Google blog to allow access by more traditional computers and other platforms of tablets and smartphones. Prior to issuing devices to students, an open source textbook was loaded onto the Kindle Fires along with PDF files of class presentations and the lab manual.

A blended learning model was used in course presentation. (3) Videos of the lectures were available for students to view prior to coming to class on the blog. Face to face class time was used for discussion of the course materials, labs, and clarification of more challenging concepts. This allowed more time for active learning in the classroom rather than traditional passive techniques. Blended courses allow more time for problem based learning to actively engage the student in the learning process. (8)

### **Implementation and Survey Data**

Students were given an initial survey when they were issued the Kindle Fires at the start of the course. Feedback was assessed through an additional post-class survey at the end of the course. Initial surveys and post surveys were continued in each of the classes every quarter to monitor results.

The survey results are as follows:

#### Post Survey Results Fall 2012

*21 post-surveys submitted*

1. *Prior to this class how much experience did you have using e-books?*
  - a. *Ranked from 0 being none to 10 being very experienced*
  - b. *Average response 4.95*
  
2. *Would you be more likely to use e-book format if they were available in future classes than you were before this class?*
  - a. *Ranked from 0 being not likely to 10 being very likely*
  - b. *Average response 8.57*
  
3. *Did you purchase a hard copy of the book in addition to the free open source book available for this class?*
  - a. *YES 9 responses*
  - b. *NO 10 responses*
  - c. *Comment noted: "purchased prior to class – wish I'd known, I wouldn't have"*
  
4. *How helpful did you find the mobile device in assisting with your learning experience overall?*
  - a. *Ranked from 0 being not helpful at all to 10 being very helpful*
  - b. *Average response 8.33*
  
5. *How helpful did you find the mobile device in providing learning tools & explanations beyond traditional lecture only learning?*
  - a. *Ranked from 0 being not helpful to 10 being very helpful*

- b. Average response 8.19
6. How helpful did you find the mobile device in providing convenient to access your course & complete course assignments?
    - a. Ranked from 0 being not helpful to 10 being very helpful
    - b. Average response 8.40
  7. How comfortable are you using mobile technology?
    - a. Ranged from 0 being not helpful to 10 being very helpful
    - b. Average response 9.29
  8. How prepared do you feel you are to use mobile technology in the workplace?
    - a. Ranked from 0 being not at all prepared to 10 being very prepared
    - b. Average response 9.57
  9. How prepared do you feel you are to use computers and the internet in the workplace?
    - a. Ranked from 0 being not prepared to 10 being very prepared
    - b. Average response 9.35
  10. How many of the tools provided by the mobile device did you use?
 

a. All of them	1 response
b. 75-99%	10 responses
c. 50-74%	6 responses
d. 25-49%	2 responses
e. 1-24%	0 responses
f. none of them	2 responses
  11. Would you be willing to spend \$500-\$600 for a mobile device to use in class if it was required?
 

a. Yes, I am already planning on spending that much or more for a computer as a student	3 responses
b. I already own a mobile device to use as a student	4 responses
c. Yes, but only if it was required	4 responses
d. Yes, if it allows me to use e-books & reduce textbook costs	2 responses
e. No	8 responses

During this pilot course with high school students, we concluded that this delivery model worked well for the instructor and the students. The students appreciated the convenience of the device and the increased opportunity for interaction with the instructor. The added time to complete lab activities in the classroom was also a benefit for the students. Preloading the written materials onto the devices for the entire course prior to issuing them to students simplified updating the device and dispersing materials to students. This meant students would have access to course materials regardless of available internet connectivity and if weather conditions caused the campus to be closed. As expected, there were some challenges in using digital devices in the classroom; most

of them due to connectivity. An additional wireless access point was installed to provide the needed bandwidth.

Success with the initial pilot of Biology 175, using the blended learning model with high school students, prompted the college to approve another pilot of Biology 175 with college students, but this time iPads would be purchased and signed out to the students. During the first quarter of our pilot using iPads, we were able to compare grades with a section of the same course being taught utilizing more traditional teaching methods. The section with iPads was given specific instructions on using the iPad for the course. The second section had the option of using Kindle Fires we had available from a previous class without any instruction or guidance for use with the class.

#### Comparison of Test Results Fall 2012

<i>Test</i>	<i>Non-iPad group (average score)</i>	<i>iPad group (average score)</i>
1	60.39	61.55
2	53.55	68.55
3	56.67	63.33
4	70	60
5	70.36	67.71
6	76	79
7	42	72.63
8	55.77	55.6
9	59.09	59.23
10	63.64	65.4
<i>Average of all tests</i>	60.75	65.3

This data showed approximately a five percent improvement in overall scores in the class. This initial comparison had some challenges, which may have decreased the accuracy of the comparison. During this initial comparison we discovered the existing wifi setup did not provide adequate coverage to meet our needs, and this issues was not resolved until the term was partially completed. In addition, it would have been a better comparison to have a group that did not receive mobile devices at all as a comparison rather than a group with Kindle Fires to use without guidance. At the time we did opt to give students the choice for the Kindle Fires to maximize internet access to course materials for as many students as possible. Other groups studying these models have found similar results. Adam Pesky et al. conducted a study with pharmacy students using a flipped course model where students prepared prior to class with web-based materials. They demonstrated students could acquire content outside of class with no decrease in proficiency and allow time for more small group discussion and problem solving. (9) A similar study was conducted teaching bronchial hygiene therapy to physical therapy students comparing traditional instruction versus hybrid instruction combined with multimedia resources and found the group with the online hybrid instruction performed significantly better on the final test. (10)

#### **Challenges and Benefits**

In our pilot programs, we wanted to consider the challenges and benefits to the students, the instructors, and the overall institution. With each successive quarter,

adjustments were made to how the devices were implemented. In looking at feedback from the initial quarter, the main challenge presented to the students was becoming familiar with the equipment. This was easily overcome in subsequent quarters by conducting a brief introduction on how to use the device on the day the devices are distributed. We have also noted each quarter students are more and more familiar with these devices upon entering the class, and seem to need less demonstration. As digital technology becomes more affordable and easier to use, audio and video formats are becoming more common and familiar formats for distributing information. (11) Benefits to students included the convenience and access to course materials, the availability of multimedia resources, ability to use photographs and video in class, and experience using new technology. By having access to all of the materials to review at anytime, many accommodations we provide to those with learning disabilities are already available to all students in the class. This approach is helpful in protecting the student's privacy. A study by A. Russell Smith Jr. et al. on student and instructor attitudes towards instruction multimedia also noted positive feedback. Both the faculty and students reported greater opportunity to view course content and control the pace of learning. The instructors reported greater levels of cognitive interactions in the lab. (12)

During the initial quarter of the pilot, the main challenge to the instructor was the time required to collect the resources and selecting applications. A significant amount of time was required to prepare video materials in advance for a flipped style presentation during the initial quarter, but the time required for preparation in subsequent quarters was greatly reduced. Class preparation was more streamline and there was greater flexibility for use of class time. The use of the blended presentation and mobile device allowed a greater amount of time to be used for class discussions and interactive lab activities. The additional time and discussions provided more opportunity to look at the application of the course material and critical thinking activities. This type of course does require the faculty to have ample time to plan a develop a course specifically to engage online students. With careful design, learning outcomes, retention, and engagement can be equal or greater than in a traditional environment. (13)

There was some initial challenge in determining which platform device to use, but the biggest challenge to the institution is having adequate wireless infrastructure to support the additional use of wireless devices. The addition of mobile devices assigned specifically for use in class likely increased the usage, it is also very likely usage will increase as more students bring their own devices on campus. An additional wireless access point was needed for adequate coverage in the classroom, and was installed a couple weeks into the quarter. Our pilot did not distinguish the amount of wireless service used for devices in our pilot from that of the rest of the campus. Other challenges presented to the institution were device management software to track location and usage, deciding which programs to implement the technology in next, and training faculty to use the devices. At the time of writing this article, a basic training course was available to faculty at no charge on college LMS, Canvas. Additional training for using specific apps is in progress to be delivered through Canvas in the future.

## **Conclusion**

Use of the mobile devices in the classroom is a natural progression to prepare students for using technology in industry after their education. Many younger students

have grown up and never known a day without computers. Older students returning for retraining need the experience with technology to prepare for a new career.

The use of the internet and technology is increasing on the campus. More and more students and faculty come to campus with one or more internet capable devices and expect rapid internet connection. This means our current system must expand, and is currently the biggest challenge. We need to not only meet our current needs, but must anticipate the rapid growth and dependence on technology in our classrooms. As we find more efficient ways to use this in the classroom, we are providing training to faculty wishing to include mobile technologies in their classes. The mobile technology increases convenience, time management, and communication. This technology will soon be ubiquitous, and although there may be concerns of distraction, reliability of information, and privacy, it is important to assist students and faculty in integrating the technology in a responsible and professional manner. (14)

The easy use of the Google blog with open source materials led to an additional pilot for NWCTHS creating a US History Class that is managed with this format and a pilot with the Biology 175 course using iPads through CPTC. The use of these tools in the US History class alone saved \$15,000 in annual licenses for materials.

This pilot has expanded our awareness of opportunities to reach our students in new ways and increase accessibility. For classes not on the LMS Canvas, Google blogs and Google sites have provided a way for students to access multimedia presentations, videos, course documents, and collaborate on projects both in and out of the classroom. Google forms have provided a tool to assess students outside of the LMS. As we move into the future, this pilot has helped to expand choices available to students. In some classes we are able to offer students the choice of a paper textbook, an electronic textbook, or a collection of open source materials in multiple formats to allow them to choose which meets their preferred learning methods and budget. Students have more choices with when and how to access course materials. Recently, we have started exploring the use of apps created specifically for our classes using free resources. Overall, this is helping us to deliver a learning experience to students that not only gives them flexibility in modes of learning, but prepares them to use technology in the future.

An additional unexpected benefit in using mobile technologies in Biology 175 has arisen. Biology 175 is a prerequisite class for many of the college programs; Surgical Technologies is one of those programs. Students who take Biology 175 through this blended learning approach have learned how to use tablet technology in their education. When those students start their career training programs, the instructors do not have to teach them how to use the devices; it is already second nature for them.

### **Going Forward**

Clover Park Technical College now has a mobile initiative. The successful use of mobile technologies has prompted other college programs to follow suit. Mobile devices are not an integral part of the curriculum in: Culinary Arts, Cosmetology, Media design and Production, Nursing, and Surgical Technologies. The cosmetology program has found that it saves students hundreds of dollars in textbook cost by requiring the students to purchase iPads and making low cost e-books available to them. The students then have the iPads that can use in other class activities and in academic classes. According to Mara Hancock of University of California Berkeley, partnering with

commercial entities that support open source or community efforts will result in improved quality of material, less expense, and increased availability of knowledge for higher education and life long learning. (15)

CPTC is now exploring the use of MOOCs, creating class specific apps, and competency based instruction. NWCTHS will pilot a science class that is designed to be a MOOC run through an app. The purpose of this class is to provide students who have not yet passed the state End of Course Biology exam, curriculum to study to help achieve success. We are aligning the content to the Common Core Standards. We are exploring the idea of granting credit for the class if the student completes all class materials and passes the state test.

Digital devices are here to stay. With careful planning and support from the institution, educators can use the devices that students already possess along with blended learning approaches to enhance the educational experience. Students at the college level can see cost benefits if the instructors intentionally plan to use open resources and lower cost e-books.

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Title: 1939 Comes Alive: Integrating Computer Gaming into the History Classroom

Topic: Social Sciences Education, Higher Education

Presentation Format: Paper Session

Description:

Engaging university freshmen is critical for student success and university retention efforts. At our university, first semester writing courses are theme-based and seek to both excite students as well as provide interdisciplinary links. In spring 2013 we decided to take this one step further and add a computer gaming component to a history course.

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Abstract:

Have you ever wondered how the study of history could be transformed into a hands-on, active-learning activity? Engaging university freshmen is critical for student success and university retention efforts. At our math- and science- centric university, general education writing courses are theme-based seeking to excite students and provide disciplinary links while teaching critical thinking, reading, and writing skills. In a history themed course, it can be a challenge to create active learning assignments while maintaining the rigor of instruction. In our course studying the 1939 World's Fair, we were intrigued with the possibilities asking the students to research The Fair's designers, their plans, and their intentions. Then they took their research and applied it by recreating The Fair using Minecraft, a massively multiplayer sandbox video game. The result was that we learned that computer gaming could be integrated into a history course and could compliment more conventional assignments, such as research papers. Our paper will explain how to implement such assignments as well as the benefits and limits of such assignments.

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I Choose C: Learner-Centered Strategies to Promote Engagement in the University Classroom

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**6. Abstract**

As the Common Core standards are being implemented across the country, the hope is that future students entering higher education will bring with them improved critical thinking and analysis skills. In order to meet the needs of these learners, it will be essential that the traditional teacher-centered model of university classroom instruction become more student-centered, providing the learners themselves with opportunities to become more actively engaged in the learning process. Attendees will be invited to reflect upon their own teaching practices and to consider some basic strategies that can help them move toward a more engaged style of instruction. The primary focus of this panel discussion is to provide participants with the opportunity to discuss and ask questions about a variety of classroom instructional strategies that are designed to provide the learner with a sense of greater ownership of the content knowledge. Strategies that will be highlighted in the panel discussion include cooperative learning, think-pair-share, the jigsaw, concept sorts, and semantic features analysis.

**1. TITLE: Intercultural teacher education: an education model for future teachers**

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## **6. ABSTRACT**

A fairly regulated school system with certain support mechanisms for students and teachers, in combination with inter-culturally educated teaching staff, are key to the successful integration of immigrant students in the school. Research shows that Slovenian teachers' views are generally not in favour of intercultural pedagogy and that the relevant guidelines are even being rejected. Researchers in this field have pointed out that teachers who are in contact with immigrant children need specific knowledge and skills, and that they thus need to be educated. The thesis I am going to present has the following objectives: to analyse training programs for future teachers in Slovenia and compare them with some teacher education programs in selected countries (Sweden, Canada and Australia) with a longer tradition of (successfully) integrating immigrant students in schools, and to analyse the informal intercultural practices of Slovenian primary teachers and identify the necessary skills of teachers to work in a multicultural classroom. On the basis of a theoretical study and empirical research, a model for future teachers' (intercultural) education will be designed. The study will be descriptive and causal non-experimental. Data collection techniques will be both qualitative and quantitative. As instruments for data collection, semi-structured interviews with teachers and a questionnaire with both teachers and senior students of teacher education will be used. A model of intercultural teacher education will emerge based on theoretical guidelines and the empirical research, namely on the current state in the system and needs of the Slovenian teachers.

***Key words: immigrant students, teacher education, intercultural education***

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## Proceedings Submission

**1. Title:** The NAEP, Civics Scores, and the Achievement Gap

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**6. Full paper is attached**

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## **ABSTRACT**

Researchers, using the NAEP database, initially investigated the aspect of curriculum narrowing in respect to student achievement in social studies. While investigating the data from NAEP, the researchers were struck by the lack of change in the achievement gap throughout the time frame of NCLB, an integral component of NCLB intent. Failure to close the achievement gap based on socioeconomics, disability, ESL/ELL status and ethnicity are discussed.

## **INTRODUCTION**

Since the inception of No Child Left Behind (NCLB), intense discussion has been raised regarding the negative impact on academic instruction associated with the tendency to devote additional instructional time to academic areas where testing has been mandated by legislation. Curriculum narrowing (Gunzenhauser, 2003) is the practice of focusing additional classroom instruction time in mathematics and reading by limiting instruction in other areas, specifically art, foreign language, music, physical education, science and social studies.

As suggested by Jerald (2006), reduction of instructional time in areas other than mathematics and literacy carries with it major costs for students, costs which “are unlikely to be recouped later in the educational pipeline.” Not a new phenomenon, curriculum narrowing has been reported as early as the 1980s (Stecher & Hamilton, 2002) and has grown to the point where 71 percent of elementary school districts report reducing instructional time for one or more subjects to make room for reading and/or mathematics (Tanner, 2008). Zellmer, Frontier & Pheifer (2006) indicate that 18 percent of comments by Wisconsin teachers, when asked about unintended negative consequences of NCLB, were related to curriculum narrowing. King & Zucker (2005) relate that a 2003 survey conducted by the National Board on Educational Testing

and Public Policy reports 79 percent of teachers in states with accountability testing limited instruction in non-tested areas. Packer (2007) cites studies by the Center on Education Policy in which “71% of the nation’s 15,000 school districts” have narrowed their curriculum to address testing needs in math and literacy. In addition to limiting instructional time in non-tested content areas, research conducted by Crocco & Costigan (2007) highlights reports from beginning teachers where they indicate that curriculum narrowing has had a negative effect on their perceptions about their opportunities for developing a satisfying teaching practice.

The culprit, however, may not just be the narrowing of the curriculum, but may also include a narrowed vision of educational priorities as well. Extensive research has been conducted regarding the impact of ethnicity, socioeconomics, English language learner status, and disability status (Orlich & Gifford, 2006; Abbot & Joireman, 2001; Howley & Bickel, 2000) on student achievement, and have documented extensive differences in achievement scores for student impacted by each of these factors. Results from the NAEP studies indicate alarming discrepancies between ethnic groups, conditions which were originally supposed to be addressed by a more alert educational system under NCLB. Interestingly enough, while scores for individual students did improve over time, the gap in student achievement remained essentially the same. Gap analyses indicated no statistically significant differences from year to year.

## **PROJECT OVERVIEW**

The purpose of the project was to determine whether or not curriculum narrowing places restrictions on student performance in social studies areas. Large-scale datasets are readily available from the U.S. Department of Education, and data were obtained from the 2010 Civics Study available online from the National Center for Educational Statistics’ (NCES) National Assessment of Educational Progress (NAEP) website. Data were analyzed using the NAEP Data

Explorer tool, also part of the NAEP website (<http://nces.ed.gov/nationsreportcard>). This data explorer tool enables researchers to select appropriate variables for analysis, as well as having options for determining statistical significance, and performing gap analysis on student achievement. Student scale scores for 4<sup>th</sup> graders in national public schools were utilized, with variables of interest including the amount of time teachers spent teaching civics in the classroom, ethnicity, ELL (English Language Learner), disability, and socioeconomic status (eligibility for free and reduced school lunch programs). In addition to evaluating changes in scale scores over time, researchers utilized the data explorer tool to assess the impact of civics instruction on the achievement gaps between various student groups.

## **FINDINGS AND DISCUSSION**

In conjunction with the Civics studies conducted in 1998, 2006, and 2010, researchers noted that data were collected relative to the amount of instructional time devoted to civics instruction in the classroom in 4<sup>th</sup> grade. Upon review of the data, statistical difference was noted during the 2006 study, but not in 1998 where the data collected was insufficient for statistical analysis, or for 2010. Table 1 provides a breakdown of average scale scores for 4<sup>th</sup> grade students in the NAEP Civics study. Student scale scores were based upon national public schools surveyed, and do not reflect private school scores. Scale score ranges for the 1998, 2006, and 2010 NAEP Civics Studies are 0 – 300.

Table 2 details student scale scores for 4<sup>th</sup> grade students by ethnicity, participating in the civics education study conducted by the NAEP. Jurisdiction for this data represents national public schools surveyed for each of the three (3) NAEP Civics studies.

Table 3 provides a breakdown of differences in student achievement based upon the amount of instructional time allocated for civics instruction. Note that the percentages indicated relate to the percentage of social studies instruction dedicated solely to civics instruction.

Results indicate that student scale scores generally improved based upon the amount of instructional time devoted to teaching civics to 4<sup>th</sup> graders. Focusing on 61-90% time category, however, data present a three (3) point decrease in student scale scores in 2010.

Delineating the data based upon restrictive factors previously discussed, (disability and ELL status) researchers noted that scales scores for students with disabilities and/or ELL status performed well below the averages for students without those performance inhibitors. Data for these students is provided in Table 4.

Evaluation of these scores is particularly disconcerting when consideration is made of the NAEP selection criteria for students with SD and ELL status. A student who was identified as LEP or ELL and who was a native speaker of a language other than English should be included in the NAEP assessment unless the student had received reading or mathematics instruction primarily in English for less than 3 school years including the current year, and the student could not demonstrate his or her knowledge of the subject in English even with an accommodation permitted by NAEP.

Table 5 provides data for students based upon socioeconomic status as determined by eligibility for free and reduced lunch programs.

Comparisons of average scale scores for 4<sup>th</sup> grade students reflected the following information:

- Average scale scores increased year by year from 148 to 156
- There was a significant difference in student scale scores based upon the amount of time teachers spent teaching civics to 4<sup>th</sup> grade students in 2006 and 2010
- White students scores were notably higher than other ethnic groups

- Scale scores for students with disabilities were 24 points lower than those without disabilities in 2006 and 25 points lower in 2010
- Scale scores for English Language Learners were 37 points lower than non-ELL students in 2006 and 37 points lower in 2010
- Scale scores for students with disabilities and ELL status were 55 points lower than students without disability or ELL status in 2006, and 62 points lower in 2010
- Student achievement gaps have not significantly changed, despite the changes that have occurred in student scales scores themselves

## **CONCLUSION**

The purpose of this study was to evaluate scale scores for students participating in the NAEP Civics Studies conducted in 1998, 2006, and 2010 with the intent of determining whether or not curriculum narrowing has an impact on student scores. Researchers looked at scores for 4<sup>th</sup> grade. Data were obtained from the National Center for Educational Statistics' website (<http://nces.ed.gov/nationsreportcard>) and analyzed using the NAEP Data Explorer tool.

Analyses of the data indicated significant increases in student scale scores, and student scale scores were noted to have increased in 2006 and 2010 for 4<sup>th</sup> grade students based upon the amount of civics instructional time students received. Evaluating scale scores overall for 2006 and 2010, it is noted that generally scale scores improved based upon an increase in the amount of instructional time devoted each week to civics and social studies instruction. Concerns have been noted regarding variations in student performance based upon restrictive factors, especially when considering that an integral aspect of NCLB has been the extent achievement gap based upon ethnicity, ELL, student disability, and socioeconomic status (Orlich & Gifford, 2006; Abbot & Joireman, 2001; Howley & Bickel, 2000). It was noted in this project that while scale scores increased for each of the ethnic groups, a definitive achievement gap still exists, and that while scale scores increased, the achievement gap has not significantly diminished.

Limitations to this study have been noted by the researchers. Specifically, while the same is nationally representative, the data for this study are limited to students enrolled in public

schools, and does not reflect the scores for private school enrollees. Secondly, the potential for study replication is limited by the potential researchers needing to know how to access the NAEP datasets and then utilization of the NAEP Data Tool. This can be readily addressed through use of the NAEP Data Tool training program available from the National Center for Educational Statistics or via the website at <http://www.ed.gov>. Additionally, the National Center for Educational Statistics conducts frequent training on usage of the NAEP datasets at national conferences such as the American Education Research Association (AERA) annual conference.

Implications for this research are far reaching. First of all, it is important to note that one of the primary concerns of NCLB legislation was to prepare all students for school, and to give each of them an equal opportunity to succeed in their academic endeavors. It is obvious that while scale scores did increase, the achievement gap has not been appropriately addressed, and therefore it has not been decreased. Nesbitt (Spring, 2011) indicates that much can be done to reduce various aspects of the achievement gap, however, reaching parity among different student groups probably will not be possible within the 2014 mandate of NCLB.

Future research concerning the narrowing of curriculum and its impact on student scores is scheduled in content areas other than civics. Recently released NAEP studies in the areas of U.S History and Geography for grades 4, 8 and 12 are currently underway with the intent of determining whether or not curriculum narrowing has had an impact on student performance in those areas. Researchers are also planning on broadening their inquiries into the other multi-year studies conducted by the NAEP such as mathematics, reading and science to assess whether or not instructional practices have impacted student scale scores and narrowed the gap in student achievement.

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## TABLES

Table 1.

*Average scale scores for 4<sup>th</sup> grade civics, all students, 1998, 2006, and 2010.*

Year	Jurisdiction	Score	Difference*
1998	National Public	148	≠
2006	National Public	153	+5
2010	National Public	156	+8

Note: Data source located at <http://nces.ed.gov/nationsreportcard>. NAEP Civics scale score range from 0 – 300. \*Difference is between 1998 average scale score and currently displayed year.

Table 2.

*Average scale scores for civics, grade 4 by year and race/ethnicity from school records.*

Year	White	Black	Hispanic	Asian or Pacific Islander	American Indian
1998	157	129	122	144	No Data
2006	163	138	137	153	131
2010	166	143	139	164	143

Note: Data source located at <http://nces.ed.gov/nationsreportcard>. Data were not collected for American Indian students in 1998. NAEP Civics scale score range from 0 – 300.

Table 3.

*Average scale scores for civics, grade 4, by time of civics instruction, 1998, 2006, and 2010*

	None	1-10%	11-40%	41-60%	61-90%	>90%
1998	-	-	-	-	-	-
2006	142	154	155	157	155	≠
2010	150	156	158	156	147	162

Note: Data source located at <http://nces.ed.gov/nationsreportcard/naepdata>. Data were not collected during 1998 survey. ≠ indicates that reporting standards were not met.

Table 4.

*Average scale scores for civics, grade 4, student disability, English Language Learner status.*

Year	Disability	ELL	Both	Neither
1998	≠	≠	≠	≠
2006	136	123	105	160
2010	138	126	101	163

Note: Data source located at <http://nces.ed.gov/nationsreportcard>. Data were not collected for American Indian students in 1998. NAEP Civics scale score range from 0 – 300. No data were available/collected for 1998.

Table 5.

*Average scale scores for civics, grade 4, National School Lunch Program eligibility.*

Year	Eligible	Not Eligible	Difference
1998	132	159	27
2006	139	166	27
2010	143	169	26

Note: Data source located at <http://nces.ed.gov/nationsreportcard>. Data were not collected for American Indian students in 1998. NAEP Civics scale score range from 0 – 300. ≠ indicates that reporting standards were not met for 2006 and 2010 .

## **Fostering Success in the Access Programs: A Wholistic Approach to Guiding Students**

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This presentation will highlight the efficacy of wholistic guiding principles utilized by the team of Personal and Academic Counsellors in the Access Programs. The Access Programs is a supportive program for students, the majority of which are Aboriginal, who are facing barriers in a post-secondary setting. The strengths and challenges students bring with them into the learning environment are discussed. The factors that affect and promote success are three main areas: systemic and structural, social and cultural, and personal. These factors are also viewed as external to the student or factors that are internal. The factors promoting wholistic success are relational that include engaging interactions in safe learning spaces.

Hawaii International Conference on Education  
Submission

Title of Submission: A Study of Southeast Asian Women in K-12 Leadership Positions: Possibilities, Limitations and Mentoring.

Topic Area of Submission: Educational Administration

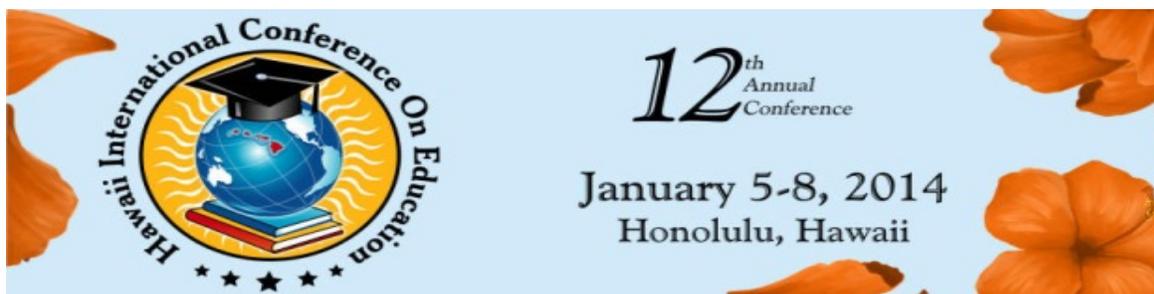
Presentation Format: Paper Session

Presentation Description: This study focuses on the challenges of gender, ethnicity, and the leadership styles of Southeast Asian women in K-12 administration and teacher-leader positions. The purpose of this project is to explore the challenges and discover the ways that Southeast Asian women have been able to overcome obstacles in K-12 school administration.

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| 8. Paper Session:        | Educational Administration   |

### **Abstract**

The objective of this study is to examine factors that lead to a successful implementation of a new school model within an existing school, while maintaining cultural traditions that are considered hallmarks of the existing school. The methodology that will guide this research will take place through survey analysis from respondents in the state of Indiana. This study could help to guide school leaders through a seamless transition when implementing a new school model within an existing school as well as highlight options for creating and maintaining a desired school culture. It is expected that the research will show that regardless of the antecedent(s) that prompts the need for change that the way in which school leaders approach the implementation process will play a crucial role in how successful the new school model will become.

## Introduction

Change tends to make people uncomfortable yet educational mandates from state and local levels require that schools are in a constant flux of change. In terms of changing models, school leaders have the most crucial impact on how successful the implementation process can be. Determining factors for how successful a new school model will become depends upon how well the school leader prepares his or her stakeholders to embrace the cultural shift. Whether an evidence-based intervention will have a positive effect in your schools or classrooms may depend critically on your adhering closely to the details of its implementation (Policy, 2003).

There are schools and / or school districts that have become “Model Shoppers;” meaning that they have become willing to change from one model to another solely based on the funding that comes with the implementation of a new model. Often times the practice of model shopping gives little regard to the needs of its consumers; the students who are being served. The sole purpose of changing from one model to another should be because it offers a better benefit to the students being served. Student success must be the primary reason that drives change. Implementation drivers are methods to create and sustain effective education (Dean L. Fixsen, Karen A. Blase, 2009). This study will look at factors that should serve as tools to help school leaders to drive change within their buildings.

Any school model that would be offered as a choice for a school to choose from comes with proven research that would suggest that it can work if implemented properly. This suggests that the successfulness of the model rest with the implementers of the model. Proper implementation of a new model involves changing the behavior of teachers, staff, and students alike. It requires a systematic approach from the beginning stages and throughout the implementation process. This study is important because school leaders must operate as good stewards over the resources that have been left in their care while at the same time, ensuring academic success of the students they serve. This study examines the implementation process from the lens of preserving the positive attributes of the existing school cultural and examines ways in which to preserve that culture while changing school models.

## Research Questions

In order to examine attitudes and assumptions about the implementation process of new school models; district leaders, school principals, teachers, and community partners in the state of Indiana were asked the following questions in a survey:

## Changing School Models: Maintaining School Culture

1. What steps should be taken when implementing a school model?
2. What steps must be taken to facilitate a smooth transition from one model to another?
3. How should information about a new model be communicated with staff, parents, and community stakeholders?
4. What are things that school leaders can do to support their staff and students through the change process?
5. What school systems and partnerships must be in place, in order to transition from one model to another smoothly?
6. What are some cultural traditions specific to the school you are affiliated with that must be supported and maintained in the mist of the shift?
7. How is success defined in regards to transitioning from one school model to another?

## Methodology

Survey Research was the best method for this type of research because, “open-ended questions allow for a greater variety of responses from participants” (Jackson, 2009). This study includes survey questions that were sent out to district leaders, such as CEO’s or school superintendents; site leaders such as school principals or directors; classroom leaders, such as teachers and students; and community leaders, such as school partners or parents.

Although survey research can be limiting because it can only *describe* a set of observations or the data collected. It cannot draw conclusions from that data about which way the relationship goes — Does A cause B, or does B cause A? (Jackson, 2009), this study strives to understand each element of the implementation process and how best to support the cultural attributes that would potentially be disrupted in the shift.

### *Setting*

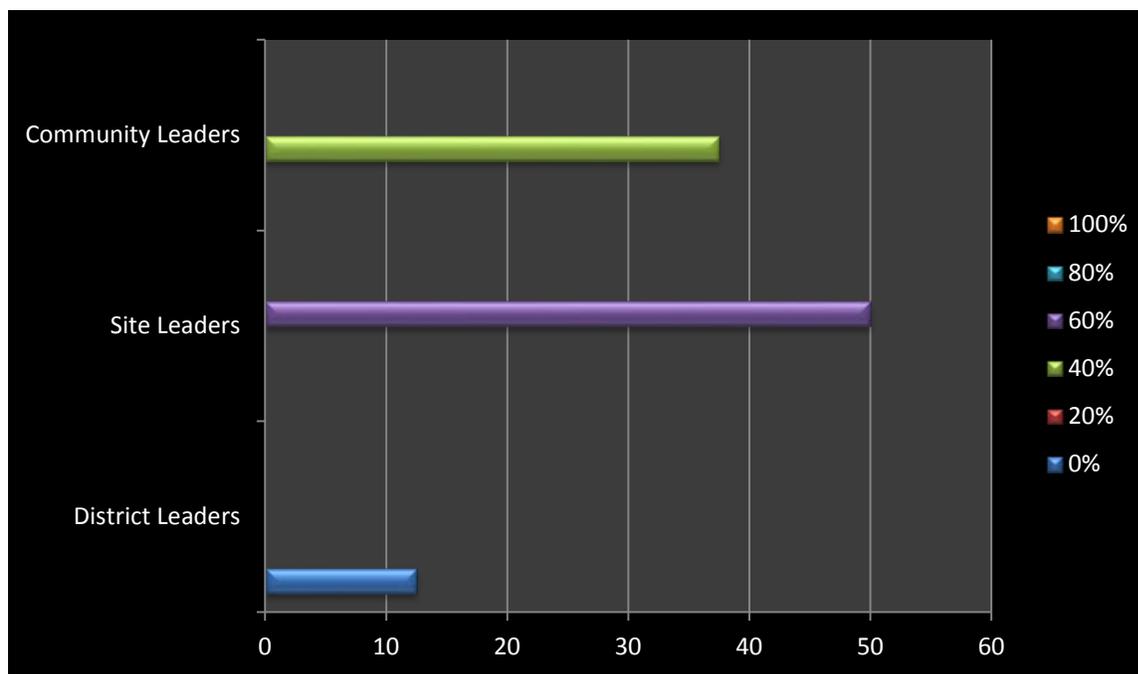
The study was conducted over a period of 6 months and involved 2 network meetings and 3 different site visits to secondary schools that were in the beginning, middle, or full implementation phases of changing school models. The network meetings highlighted a total of 6 different schools that presented their successes and pitfalls as they moved to full implementation of their chosen school model there were 119 individual participants that attended the network meetings. Fifteen people that represented district leaders, site leaders, classroom leaders, or community leaders were invited to participate in this study. They were all presented with the same set of questions and asked to respond based on their own unique situations within their individual schools or districts. Their perspectives will help this study look at implementation in a more diverse way.

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Participants

The participants are categorized in Table 1. Fifteen individuals were invited to complete the survey. Nine participants completed the survey. The results in Table 1 reflect the 9 survey respondents.

**TABLE 1**



Answer Choices –	Responses –
Superintendent / CEO of a school corporation	11.11%
School Leader / Director / Principal	44.44%
Community Partner	44.44%
Total Respondents: 9	

**Data Collection**

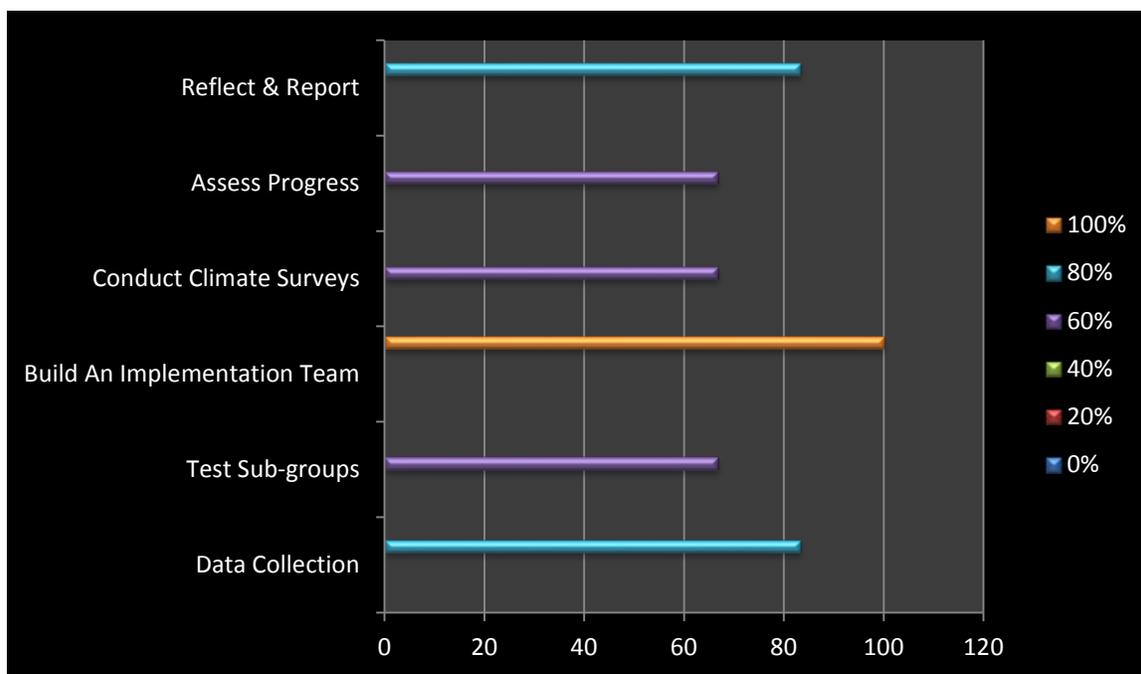
The survey was conducted through both on-line and face-to-face modalities. The research questions were primarily qualitative. The philosophy in using this approach was to allow respondents to expound on questions, which may have led to a more in-depth discovery. Initially (3) multiple choice questions were asked to collect data on the respondent’s role within the implementation process, identify what region they were responding from, and to gain an understanding of the respondent’s awareness of what steps should be taken within the implementation process. The steps that were presented to the participants represent an implementation model developed by the researcher and are displayed in Table 2 below.

### Changing School Models: Maintaining School Culture

Additionally, the respondents were provided space on their survey to give additional comments. One respondent included: “create buy-in with staff” on their survey to indicate a step that should be taken during the implementation process. A total of 6 participants responded to the question, while 2 participants left this question blank.

### Table 2

Which of the following steps should be taken when implementing a school model?



Answer Choices –	Responses –
Data Collection & Comparison	75%
Test Sub-groups	50%
Build an implementation team	100%
Conduct Climate Surveys	62.50%
Assess Progress	62.50%
Reflect and Report	75%
Total Respondents: 9	

## Results

Questions 1-3 were discussed the Data Collection section; therefore only the core questions that were designed to guide the research will be discussed in this section. The following insights were revealed through the on-line and face-to-face survey interviews:

1. *In your opinion, what steps MUST be taken to facilitate a smooth transition from one model to another?*

100% of the participants responded to this question and the following themes materialized in their responses: In order to facilitate a smooth transition from one model to another, informed and collaborative decision making that includes district leaders and school leaders is essential. Leaders then must ensure buy-in from all stake holders while being honest about why the change is needed. Leaders must then begin to build their team being careful to get the right people on the bus. This process involves sharing information across all levels, advertising and communicating the goals and objectives of the new model in as many ways as possible. For example, advertising on relevant websites. Collecting data that will help the team learn from the previous model as a means to support the pieces of desired culture that must stay in place. Other ideas included school leaders sponsoring activities that will rally the staff, students, parents, and community around the change. And lastly, Leaders must become transparent and honest about any barriers and short comings about the new model, while at the same time, presenting a plan of action that will address the barriers and short comings.

2. *How should information about a new model be communicated with staff, parents, and community stakeholders?*

100% of the participants responded to this question and the following themes materialized in their responses: Information about a new school model should be communicated with staff parents and community stakeholders face-to-face initially due to the imperative need to understand the affected population. It is critical that the initial communication should be conducted face-to-face. It was suggested, in the responses, that several opportunities for face-to-face meetings such as Parent Nights, Town Hall Meetings and the like be a vehicle for disseminating information about the transition. It was also noted that school leaders should

## Changing School Models: Maintaining School Culture

remain positive, but honest with their staff. Staff should be included in the implementation process by forming committees to achieve the goal and providing opportunities for leadership roles. The caution here is that school leaders should not make promises around future salaries and positions until he or she is ready to move forward. Once the initial message has been shared it then becomes imperative for the news to be shared consistently in the following forms please refer to Table 3:

**TABLE 3**

### Vehicles for Sharing Information

Staff	Parents & Students	Community
In Writing	In Writing	In Writing
Radio/Television ads	Radio/Television ads	Radio/Television ads
New letters /Website	New letters /Website	New letters /Website
Phone Calls	Phone Calls	Phone Calls
E-mail / Text/ Postal	E-mail / Text/ Postal	E-mail / Text/ Postal
Staff Meetings	Parent Meetings	Community / Board Meetings
One-on-one Meetings	One-on-one Meetings	One-on-one Meetings
Community Events	Community Events	Community Events

3. *What are things that school leaders can do to support their staff and students through the change process?*

One respondent skipped this question, while 8 offered a response. The following themes materialized in their responses: In order for School leaders to support their staff and students through the change process they must lead by example and clearly communicate regularly about where the team is in the process of transition and what areas need to be improved upon. The respondents felt it would be important to communicate what team is doing well. School leaders should bring to the team data that supports the goal and use this to spring board next steps. School leaders must support with fidelity that way implementation will take place, with fidelity. School leaders should continue to have open meetings and be open to suggestions. School leaders should be both willing and able to qualify the fears/angst of staff and students. School leaders should involve staff, students, parents, and community into the process. Allow the transition to be positive and fun. School leaders should bring in specialist to

## Changing School Models: Maintaining School Culture

conduct on-going professional development. Lastly, school leaders should listen, listen, and listen.

4. *What school systems and partnerships MUST be in place, in order to transition from one model to another smoothly?*

Seven respondents replied to this question while 2 skipped the question. The seven respondents felt that in order to transition from one model to another smoothly the school systems and partnerships that must be in place are outside organizations that will provide support for teachers and students, ideally free of charge, specifically mentoring and counseling services because academics must remain the focus in spite of any change process. While it is noted that education of scholars can't slip while the change takes place schools must also strive to produce holistic scholars therefore schools must have partnerships in place that include community based organizations, faith based organizations, and business organizations. There must be systems in place to track, monitor and assess student growth to ensure success. These partnerships should be well informed and amenable to the transition. School leaders must reach out to organizations and form partners that may have not been considered before so that the school is in the best position for success.

5. *What cultural traditions specific to the school you are affiliated with must be supported and maintained in the mist of the shift?*

Seven respondents replied to this question while 2 skipped the question. The seven respondents ascertained that the following cultural traditions must be created, in some cases, and maintained in others: A culture of respect and support for students, no matter what their background. The respondents felt that school leaders had to produce culturally competent staff as well. Examples of In-house programs that were mentioned are as follows:

- ◆ Academic programs such as Dual Enrollment
- ◆ Community building programs such as Grade level celebrations
- ◆ Programs of recognitions such as Student of the Month

6. *How is success defined in regards to transitioning from one school model to another?*

Seven respondents replied to this question while 2 skipped the question. The seven respondents noted that success, in terms of transitioning from one school model to another, is

## Changing School Models: Maintaining School Culture

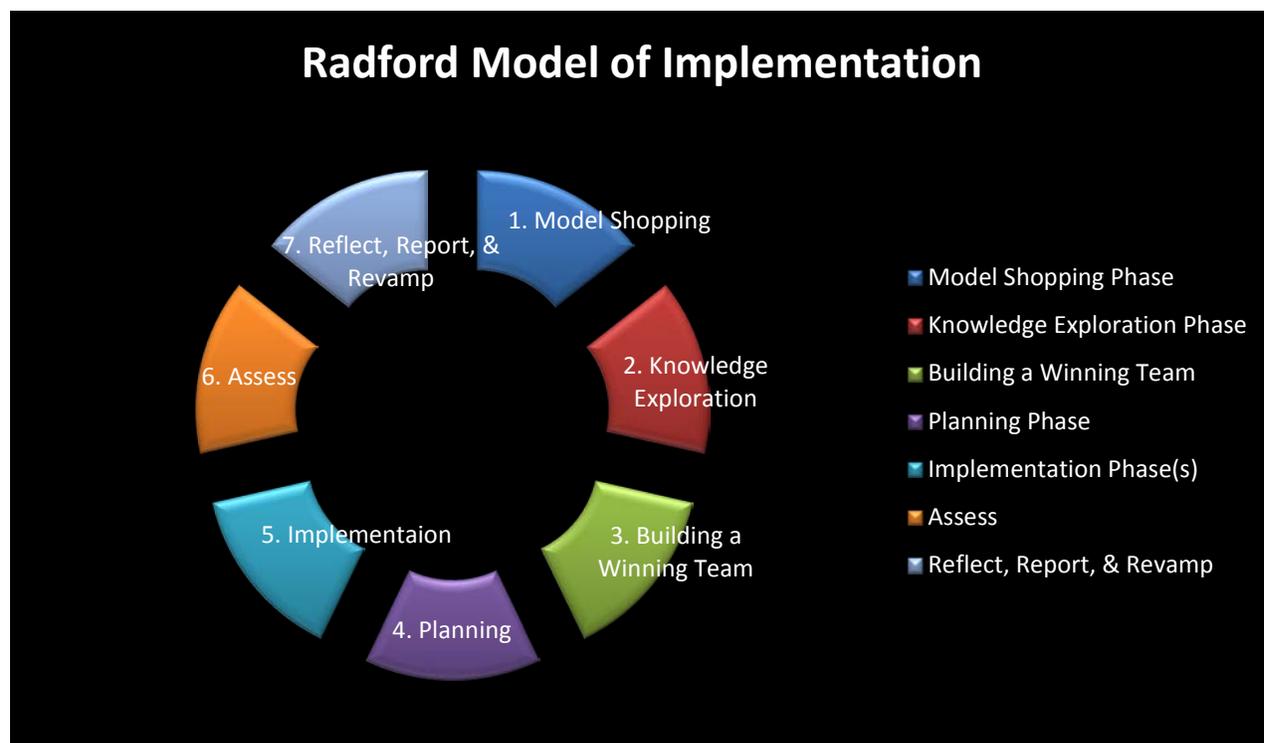
when there is full implementation of the new model and the data shows positive growth in tracked areas of student, staff, and leadership performances. It was also noted that student and staff attitudes are great indicators of success.

## Discussion

The findings of this study show that school leaders are not always aware of the steps that should be taken when implementing a new school model. Table 2 shows that, when asked about which steps should be taken to implement a school model, only 1 of the 6 answer choices were selected by 100% of the respondents yet all the answer choices are essential when implementing a new school model if success is to be found.

The National Registry of Evidence-based Programs and Practices (NREPP) states that successfully implementing a program that fits your organization's needs is a process... It is not enough to simply select a proven evidence-based program and assume success will automatically follow. Good implementation strategies are essential (The Five Stages of Implementation, 2012) While NREPP suggest that there are 5 stages to follow when implementing an evidence-based program, the researcher would suggest the following model of implementation:

**FIGURE 1**



### **1. Shopping**

The phase of shopping for a new school model involves more than simply looking for the model that offers the largest amount of funding. Typically this phase happens on the district level, but when carried out correctly it involves board members, district level staff, the school leader, and key department heads. Prior to shopping the team should make a shopping list of must have in a program and a list of desirables. This is a model that the team will potentially be married to for quite some time so it is worthy of careful consideration. The work involves meeting regularly to discuss progress and selection. The goal during this phase is not to select one model and run with it. Ideally, 3 models are selected to present to a larger community of decision makers. . A desired cultural hallmark to create or maintain in this phase would be good stewardship.

### **2. Knowledge Exploration**

Once the program shopping phase is completed a new team should be formed. The team should be comprised of board members, district staff, the school leader, teachers, and students. This team may find it beneficial to operate in sub-committees. The big goal is to learn about the 3 school models selected by dissecting it apart to weigh the pros and cons of each element of the program to determine its usefulness to the school being served. Some of the members may need to conduct site visits, while others operate as scientist and subjects. If it is a teaching model a small group of teachers and students should work together, perhaps over a summer program, to do small phases of implementation for the purpose of field testing. Once all the information has been gather, the findings should then be presented to the larger team and then turned over to the school principle and the district administrator for further consideration. The final decision should be a collaborative effort from the board members, the district level leader, and the school leader. It is important to be selective in the process being careful not to choose a model for the sake of choosing one or to save time. A desired cultural hallmark to create or maintain in this phase would be Academic Excellence.

### **3. Building a winning Team**

Building a winning team is perhaps the hardest, but most important step in this process. Once a decision has been made about the model that will be adopted the real work begins. A school leader must be aware of his or her team members. Knowing their strengths and challenges will be vital in the selection process. Too often leaders select the staff they enjoy working with, but those staff members are not always the best

candidates to move a model forward. If the goal truly is to build a winning team allowances have to be made for potential personality conflicts in order to meet the goal in mind. School leaders must be aware of the dream achievers as well as the dream killers on their staff because work has to be done with both groups. A School leader may find it helpful to introduce some team building activities into a staff meeting that highlights personality traits prior to building their team. Once the team is formed the school leader will need to keep flexibility in mind, knowing that team members may come and go. Building a winning team takes work and school leaders should be mindful of those that would join the team for hidden personal agendas to safeguard against such actions. The only focus should be student achievement and school-wide success. A desired cultural hallmark to create or maintain in this phase would be teamwork.

#### **4. Planning Stages**

If building a winning team is the hardest task for a school leader, then surely the planning stages of implementation must be the most frustrating. However it is work that is once again crucial. Planning the implementation of something new is challenging on all levels because people, by nature, are resistant to change. One of the hallmarks of the school culture must be that mistakes are only things to learn from. If the students and staff in the building can view mistakes as tools for learning then the challenge isn't so great. Every element and population of the building must be considered when a new model is being introduced. Time has to be allotted for mistakes and the correction of those mistakes. Meetings should be held regularly to check the process. One of the biggest pitfalls that school leaders run into when implementing a new model, is not having an effective checks and balance system. Every meeting should have an agenda, and there should be documentation of the responsibilities assigned in each meeting with deadlines attached to the assignments. This tool should not be used as a, "Gotcha!" but rather it should be used as a reminder and accountability tool. Leaders need to set deadlines but follow up with responsible parties so that everyone feels both responsible and supported. A desired cultural hallmark to create or maintain in this phase would be responsibility.

#### **5. Implementation of the model**

It's time to go live! The winning team has put their hands to the plow. They have put their all into bringing the new model into the school so the rest is a downhill battle

right? No, there is still much work to be done. Implementing the model so that students and staff don't fill the bumps and bruises of change is a craft. It's achievable, but it does take some skill. The number one rule is positive honesty. It is so important to remain both positive and honest in this phase. School leaders must remain calm in the face of what could seem like chaos. Teacher and students will take cues the leader. If the leader appears as if all is well, then the building will function as if all is well; the opposite is true as well. During this phase the school leader must be observant and be willing to listen and stay open to suggestions. Many of leader has fallen because they became inflexible and operated as if their way is the only right way, when in fact there are many way to a successful path, the difference is that they are different paths. A desired cultural hallmark to create or maintain in this phase would be honesty.

## **6. Assess**

Many leaders look at assessment as an ugly word, but assessment is really meant to be supportive. If you begin, as suggested, in phase 1, with your shopping list, then you have a clear picture of the things that the model was meant to achieve. Assessment should really begin in the beginning. Testing your old program to identify the things that were working and the things that need to be replaced give you a baseline for where the model should be taking you. Assessment should, at minimum, happen at the onset of a program, midway through, and again once full implementation has been achieved. Ideally, assessment is happening consistently and often. School leaders should consider bringing outside evaluators in to evaluate the process so that fidelity is protected. A desired cultural hallmark to create or maintain in this phase would be Integrity.

## **7. Reflect, Report, Revamp**

This stage involves not just looking back at the end of the day on your drive home to say, "That was really done well.," or, "I will change the way I do that next time." Reflection should also be a systematic process that involves the make up a team. It may feel to a school leader that he or she is putting his or her neck out for slaughter, but the next step is necessary if success is to be had. As stated before, every team has some dream makers and some dream killers. The reflection team should have both dream makers and dream killers on the team in a purposeful way. The goal is to gather honest information about what is working and what isn't working. Although it may be painful to listen to, the dream killers on your team are going to be all too helpful in providing

## Changing School Models: Maintaining School Culture

the information about what isn't working in the implementation process. School leaders may find it helpful to limit these meetings by having pre-set times.

The reflection meetings should be followed by school-wide staff meetings to celebrate the successes and report the challenges that lay ahead. In this reporting phase the school leader should be pro-active in informing the board members, his or her district level supervisors, as well as parents and community partners. It's important to keep everyone informed to both garner support and seek solutions.

Revamping is a cycle that should not end. Once the new school model has been implemented and people are comfortable with how to run it, the innovation or revamping will naturally kick in. However; school leaders need to be mindful to facilitate that process to make sure that some members of the team don't become individual shining stars, while others become comets and burn to a fizzle. The goal is to work as a team to produce the best scholars possible and individuals can't achieve that goal, only effective teams can. A desired cultural hallmark to create or maintain in this phase would be Family.

## Conclusion

In conclusion, the data presented in this study supports the claim that school leaders have the most crucial impact on how successful the implementation process can be. The study further confirms that implementation is an on-going process that requires a team effort. The research shows that Leaders must build a winning team that is inclusive of school staff, students, parents, community partners, and district level leaders if they are to facilitate successful implementation of a new school model. This study shows that there are clear steps that a school leader can't bypass in the implementation process if he or she is to avoid pitfalls in the process. The study moves on to offer information on ways information should be communicated concerning ushering in a new school model. Included in this study are steps that school leaders can take in order to support their staff and students through the change process. This study shows that school leaders capable of empowering their staff and students through the change process instead of mandating and dictating them through the process. This student considers the cultural digression that can be avoided when going through the implementation process by offering snapshots of partnerships and organizations that must be on board to support this change. School culture does not have to suffer as a result of a school changing its model. This study encourages school leaders follow an implementation model when implementing a new school initiative and further cautions leaders that skipping steps can lead to the demise of a successful plan.

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**Re: Submission ID# 1602 (Dr. Marybeth Fortune)**

**Title of the Submission:**

"Implementing Capstone Assessment Accountability Practices in Graduate Programs: Implementation Strategies"

**Name of the author (single author of this publication):** Dr. Marybeth Fortune, Ph.D.

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**Description:**

This study investigated leadership strategies in relation to the implementation of an accountability initiative in a graduate program in higher education. Findings indicated that strategies identified as most salient within each of stage of implementation relate to establishing the purpose the initiative, to fostering faculty empowerment, to promoting positive capacity beliefs, and to promoting positive context beliefs. The identified leadership strategies have the potential to assist the institution's efforts to demonstrate institutional effectiveness. (\*abstract is on the next page)

## **ABSTRACT**

The purpose of this study was to determine what strategies appeared most salient in the implementation of a locally developed comprehensive exam in a graduate program in higher education. Specifically, the researcher aimed to situate an understanding of the role of leaders in the adoption and implementation of this accountability measure. Limited information in literature specific to the implementation phase of a capstone assessment in graduate programs within higher education frames the need for this study's findings.

This qualitative study examined implementers' experiences with the implementation processes of a locally developed comprehensive exam. Findings supported the study's argument that strategies identified as most salient within each of stage of implementation relate to establishing the purpose of the comprehensive exam, to fostering faculty empowerment, to promoting positive capacity beliefs, and to promoting positive context beliefs. Findings suggest that organizational leaders can foster conditions that promote optimal implementation of this accountability-related initiative by employing these strategies, which equips front line implementers to meet the challenges of change. These strategies ultimately have the potential to assist the institution's ability to effectively respond to accountability-related mandates, thereby assisting with efforts to demonstrate institutional effectiveness.

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## **Abstract**

While questions exist about the effectiveness of online education, it is a growing part of the pantheon of educational choices available to students in America today. Though online education first gained popularity for advanced learners, increasingly at-risk populations are enrolling in online learning environments. Research in K-12 full-time, online learning environments is nearly non-existent. This study investigates student achievement in the full-time, online learning environment and the effect parents have on student success. Themes from semi-structured interviews found parents of current or former students in a full-time, online school perceive multiple facets of student success in the online environment. The school can provide support to families by communicating, being transparent with tools, and individualizing instruction. Students must be self-motivated, engaged and participating, and accountable for their own learning. Parents should be available to monitor, mentor, and motivate students.

Keywords: Online education, high school, parental involvement

## **Parental Involvement and Student Success in High School Online Education**

Technology has a tremendous impact on many facets of 21<sup>st</sup> Century life. Technology affects how we communicate, do business, make friends, retrieve and disseminate information, and maintain relationships. Education is not exempt from adapting to changing technology. Education has long been augmented by the daily use of SMART boards™, projectors, personal computers, and the internet. With the rapid growth of internet-based courses and online schools, technology is also impacting how instructors teach, and students learn.

Online K-12 education is one of the fastest growing educational reforms in American education today (Watson, Murin, Vashaw, Gemin, & Rapp, 2011). Online learning is often difficult to define as it is not a one-size-fits-all model. One of the difficulties facing researchers and policy makers is in defining online learning environments to be able to compare like programs. There are multiple variations in program and delivery, ranging from full-time schools where students earn a diploma, to statewide programs providing single-course enrollments, to a student in a rural area taking an advanced course not offered in his district, and more (Cavanaugh, Barbour, & Clark, 2009; Clark, 2001; Rice, 2009; Watson et al., 2011).

In the 2011 version of the annual report, *Keeping Pace with K-12 Online Learning*, Watson et al. (2011) state that full-time enrollment, in schools where students do their coursework completely in an online environment, continues to grow. Enrollment has increased by approximately 50,000 students nationwide just between 2009 and 2011 (Watson et al., 2011). Additionally, between 2010 and 2011, three more states opened full-time, virtual schools bringing the total number of U.S. states with this educational choice to 30 (Watson et al., 2011).

While the volume of research in the online school population is increasing, not all research is comparable as not all online programs have the same scope (Barbour, 2009; Clark,

2001; Cavanaugh et al., 2009; Watson et al., 2011). An often-cited study conducted by Clark (2001) defines early online educational programs. A virtual school is defined as, “an educational organization that offers K-12 courses taught through Internet- or Web-based methods” (Clark, 2001, p. 1). Barbour (2009) further defines the differences between virtual schools and what he terms cyber schools. Virtual schools can be state-wide, multiple school district, or province consortia, and provide courses to students on an individual basis, whereas cyber schools are full-time programs in which students participate for their entire school experience (Barbour 2009). Clark (2001) termed the course providers or consortia Virtual Charter Schools while the full-time schools he termed Local Education Agency-Based Schools. Between the years 2004-2007, cyber school enrollments tripled, but they still account for a small percentage of the overall population of students taking classes in an online environment (Tucker, 2007). While it is a small part of the overall population, during the years 2009-2011, 50,000 additional students enrolled in a full-time, online educational option (Watson et al., 2011).

Much of the research conducted in the online learning environment has been completed in large, state-sponsored virtual course providers, such as Florida Virtual School which does not provide full-time, comprehensive school programs for students (Black, 2009; Feng & Cavanaugh, 2011; Hawkins, Barbour, & Graham, 2011; Lemley, Sudweeks, Howell, Laws, & Sawyer, 2007; Liu, Black, Algina, Cavanaugh, & Dawson, 2010; Liu & Cavanaugh, 2011; Lowes, 2005; Wallace, 2009). In addition, more research has been conducted with older participants from post-secondary institutions and is sometimes used by policy makers and/or educators to make generalizations regarding K-12 education (DeTure, 2004; Dixson, 2010; Hung & Zhang, 2008). Neither of those segments of the population learning in online environments encompasses the group of learners who attend school in full-time, K-12 online environments.

Most of the current research surrounding those attending full-time, online schools is limited (Barbour & Reeves, 2009; Cavanaugh et al., 2009). Research reporting sometimes consists of personal experiences of practitioners in the field. For example, Greenway and Vanourek (2006) provide some history of full-time, online environments and then give examples of different types of programs, including a description of the typical day for a virtual school student. Revenaugh (2005-2006) shares her experiences as an administrator in an online school in Arizona, illustrating how online learning functions in a fully-virtual environment with stories of unique student situations. While engaging and informative, questions remain in the minds of policy makers regarding the effectiveness of a fully online education for students in grades K-12. In an article based on their research, Picciano, Seaman, and Allen (2010) state that without more public policy and study, fully-online programs are never going to be as widely accepted as blended programs. Black (2009) affirms that virtual schools should be leading the research in online learning. There remains a need for more systematic, organized research using full-time, online learning environments.

Research demonstrates that most students require a caring community to be successful in online learning environments (Archambault et al., 2010; Dzakiria, 2008; Kerr, 2009; Repetto, Cavanaugh, Wayer, & Feng, 2010; Ronsisvalle & Watkins, 2005). Online education is not fully asynchronous any longer as stakeholder interaction becomes more mainstream through blended learning and synchronous opportunities for students. Teachers find opportunities for students to participate with each other in the online environment using a variety of strategies including micro blogs such as Twitter™, blogs, peer feedback, and student mentors (Cavanaugh et al., 2009; Dixon, 2010; Nykvist, 2012, Zhao, Yan, Lai, & Tan, 2009).

Though policy makers and those responsible for school budgets may want to believe this is not the case, students who attend online schools still need teachers (Dawley, Rice, & Hinck, 2010; Zhao et al., 2009). In a survey of 220 school superintendents, assistant superintendents, and curriculum coordinators commissioned by K12, Inc., America's largest provider of curriculum and online education programs, 88% responded that it was extremely important to have teachers available to help students with individual needs when taking online courses (K12, Inc., 2012). In that same survey, 97% of respondents indicated that if students were engaged in full-time, online schooling, teachers were extremely important (K12, Inc., 2012). Teachers are reaching out to students in new ways using project-based learning and technology to decrease the distance between teacher and student with YouTube™, flipping the classroom, text messaging, and virtual role playing (Boling & Beatty, 2010; Fralinger & Owens, 2009; Herring, 2004; Rosa & Lerman, 2011).

Parents are one group of stakeholders virtually absent from literature related to K-12 online learning environments. Full-time, online schools often partner with parents to oversee and support students who are completing their education in an online environment. Though parents play a significant role in educating students who school online, the research is nearly silent on their roles. For the purposes of this research, the larger issue of parental involvement, and how it relates to the online environment, was explored.

### **Research Questions and Purpose**

The goal of every educator is to find solutions to help students be more successful. With that end in mind, this study focuses on two primary questions:

1. What factors affect student achievement in a K-12 online school?

2. What are the perceptions of parents concerning their role in the student achievement of their children while they were enrolled in a full-time, K-12 online school?

This study provides a glimpse into perceptions of parents whose children attended or are currently enrolled in a full-time, online school, and may better generalize to that growing school population. Policy makers are looking to technology to help solve the problem of teacher shortages or budget shortfalls. If online education is to be used for this purpose, it needs to be effective and systematic so students may find success. To that end, practitioners in the field must find methods to reach all of the students who walk through the door.

With a few notable exceptions, research pertaining to parental involvement in K-12 online schools of any configuration is nearly absent from the discussion (Black, 2009; Liu et al., 2010; Rice, 2009). Most American parents send their children to the local brick and mortar school to be mentored by a teacher at least 180 days each year. Even in the best blended or synchronous online environments, teachers are not in front of students daily in the same way they are in a brick and mortar school. Black (2009) maintains that parents who have students in an online school environment have a strong influence on the achievement of their students, but encourages further study using qualitative methods to determine perceptions and the roles of parents of students in virtual schools.

## **Methods**

### **Setting**

Online High School (OHS) is a full-time, virtual school in the Western United States. Ninety-five percent of the students at Online High School are full-time students, with the other 5% attending OHS part time and also taking classes at a brick and mortar high school part time. OHS is a public charter high school and demographically similar to the brick and mortar high

schools in the state where it exists. Special populations include students with special needs (>10% of the overall population), free and reduced lunch (>60%), a growing number of homeless students (<1%) and at-risk or emancipated youth (>20%). Populations that are not attracted to OHS are students who are Limited English Proficient (LEP) or students who are interested in activities that a virtual school has a difficult time providing, such as team sports or musical performance groups. OHS is a large virtual school with students in every county of the state where it is chartered.

OHS' instructional model is ideal for a study that could be generalized to the larger full-time, online school population for several reasons. OHS has large enrollments and, as it has been enrolling students for over 10 years, there is a significant population from which to draw. OHS also has some challenges, as many online learning environments do, including high student attrition. Seeking solutions to increase student achievement and parental engagement will aid OHS and other online schools by helping students increase the frequency and level of academic success.

### **Data Collection**

The most effective way to determine the perceptions of parents of full-time, online school students is through the use of a series of semi-structured, one-on-one interviews. Semi-structured interviews allow the researcher to collect data efficiently and give participants a chance to voice their opinions (Creswell, 2008; Marshall & Rossman, 2011). An electronic notice was sent to current and former parents of OHS students from the public directory information provided by OHS. This notice explained the research project and solicited volunteers for a follow-up phone call. Using the results from the electronic notice, all parent volunteers were contacted to determine which parents were suitable candidates for participation in this study. There were two

established criteria for parent participants in this study: 1) parents had a student enrolled at OHS for at least one semester between 2010 and 2012, and 2) students had either been successful at OHS or had not found success in the online environment.

After participants were recruited, a schedule was established for the first of two semi-structured interviews conducted, either face-to-face or electronically, using Blackboard Collaborate™ or Audacity™. The first interviews lasted 70-105 minutes each. All participants consented to a follow-up interview which lasted 35-55 minutes.

## **Results**

Using a group of eight volunteer participants, 16 semi-structured interviews were conducted, transcribed, and coded for themes to determine the perceptions of parents concerning their roles in the achievement of their child. These participants were a varied group with diverse journeys to having their children participate in online education. It is difficult to determine the perceptions of parents concerning their involvement in their students' education without spending some time describing the personal experiences that brought these families to online education. A greater understanding of the participants allows the reader to establish a paradigm for the parents' roles and the success factors of their students. Pseudonyms were provided to increase anonymity of all participants and their children as suggested by Creswell (2008) and Marshall and Rossman (2011). The table below describes the demographics of the parent participants in the order they were interviewed.

*Participant Synopsis*

*N=8*

<b><i>Pseudonym</i></b>	<b><i>Family Status</i></b>	<b><i>Education</i></b>	<b><i>Free and Reduced Lunch</i></b>
Hillary	<i>Same-sex relationship 2 children 1 learned online (F)</i>	Graduate school	Yes
Michael	<i>Married 4 children 1 learned online (M)</i>	College	Not sure
Melody	<i>Single parent 4 children 1 learned online (M)</i>	Graduate school	Yes
Maria	<i>Married 4 children 2 learned online (M/F)</i>	College	Yes
Cari	<i>Married 3 children 1 learned online (M)</i>	College	No
Nathaniel	<i>Married 4 children 1 learned online (M)</i>	Graduate school	Yes
Elizabeth	<i>Married 2 children 2 learned online (M/F)</i>	College	No
Shelli	<i>Married 2 children 2 learned online (M)</i>	Some college	No

All of the parent participants attended college at some point in their educational journey.

The mean online learning experience of the students in this group of families was 2.13 years.

Half of the families qualified for an internet subsidy while their children were enrolled at OHS, which is indicative of having a lower socioeconomic status or qualifying for free or reduced lunch. Within these eight families, 11 students were represented, with varying degrees of success in the online environment. Diversity in experience was evident within some families, as one student was often more successful or participated more fully than a sibling. Of the 11 students, six had negative experiences and the remaining five succeeded as online learners. Two of the students dropped out of OHS as their last school, passed the GED test, and are currently employed. Two left OHS to attend other online schools and three are attending other brick and mortar high schools. Three students remain at OHS, and are on track to graduate with their cohort.

The setting, structure or culture of the prior school attended by the children influenced many of the parent participants to select OHS for their children. Three participants removed their children from brick and mortar schools, enrolling them in OHS to help their children deal with social pressures.

Phoebe came to online learning in middle school and stayed through her first two years of high school. She was driven, very focused on her studies, and hoped that she would find a culture in an online school conducive to excellence. Her mother shared that the middle school she had attended was a negative environment for Phoebe, and Phoebe “hoped that everybody would be there [OHS] because they were really super focused on academics and wanting to work hard and learn a lot.” She found a wide variety of students in the online school. She successfully attended online schools for four years and will graduate this year with honors from her brick and mortar high school.

Michael's son, Gabe, came to OHS to flee from social pressures that caused him to try to take his own life more than once. Originally, Michael's wife responded to my electronic notice. When the phone call was made to ask if Michael's wife would participate in a longer interview, she responded that it was too painful a time for her to discuss. Later, Michael responded to the email request volunteering to participate. Remembering those high school years when Gabe was suffering he recalls:

"I guess he felt like he was picked on at times, and sometimes bullied, although he's a big kid. He's probably six-two or six-three, 230 pounds...He's a pretty sensitive kid, and he's really nice. He's just really a gentle giant type of thing, so I think he did feel intimidated by some of the kids at school."

Aside from bullying, other students came to OHS because they had debilitating social anxiety. Shelli's son, Porter resisted going to school for years. After a successful year in kindergarten, Shelli and her husband noticed that Porter was struggling socially in first grade. Their older son, Preston, would wave to his parents, jump out of the car and go on the playground, but Porter would refuse to get out of the car or go into the school building. Shelli noted during one of the interviews:

"...we literally had to drag him into school every day. After years of going through this with him, I mean, this went on through fifth grade, and after fighting him every day, every step of the way and him, you know, he would pretend that he was sick, and we didn't know if he was sick. I mean, this went on like I said, through fifth grade...It was just an emotional drain on us."

Porter and his family sought and found some relief with the online educational setting.

Multiple participants noted their students lacked motivation. While there was some communication between school and home in the brick and mortar school, by the time the parents were made aware that students were falling behind, it was too late for them to catch up. Maria shared that both of her students would come home telling her they had no homework and because she could not see exactly what they were doing in class all the time, she did not realize that they were struggling. “They always came home and said they never had homework, and then I would find out midterm that they were failing and they haven’t been doing their homework.”

Other participants sought the flexibility of the online setting. Three of the participants had sons with disabilities. Cari’s son, Christian, and Elizabeth’s son, Skylar, have Attention Deficit Hyperactivity Disorder (ADHD). Skylar also was diagnosed with Oppositional Defiant Disorder (ODD) shortly after starting at OHS. Shelli’s son, Porter takes medicine for his social anxiety that flips his day. He sometimes slept late into the afternoon, and virtual school gave him the opportunity to do his schoolwork in the evenings or late into the night. Elizabeth’s daughter, Lori was able to take on the responsibility of raising a guide dog due to her flexible schedule at OHS.

Physical illness drove Nathaniel to choose an online school for his son Brian. During the first semester of Brian’s sophomore year in high school, he contracted Swine Flu and was never able to go back to a traditional high school. He attempted to go back several times. During the interview, the family noted:

“He had a fever most days. He had several strep infections; I think he had six of them in a matter of two months. He had two years where he was feeling really sick, too sick to do anything on a daily basis. In fact he still feels some of the effects from it today.”

### Top 10 Frequent Codes from Interviews

<b>Successful Students</b>	<b>Number of Responses</b>	<b>Unsuccessful students</b>	<b>Number of Responses</b>
Parent Monitoring	37	Students need to be self-motivated	41
Students need to be self motivated	35	Parent available to support, encourage, coach	41
Time with student (positive)	29	Education cannot be one size fits all	36
Immediate Feedback for students	29	Students see relevance of education	35
Parent available to support, encourage, coach	29	Daily Schedule/lack of schedule	33
Being there makes a difference	28	Parent question and monitor	31
Flexible = preferred activity	25	Student needs increased accountability	29
Students see relevance of education	22	Student lack of participation	28
Student responsibility/accountability	21	Parent time requirement	28
Communication with school	18	Communication with school	27

Often, the participants had conflicting thoughts whether they had identified their student as successful or not successful. For example, the parents of successful students described students making their own schedules, setting a daily plan, and doing much of the work independently.

Hillary shared:

“One of the things that made me think from the beginning that an online school would work for [Phoebe] is that she is a person who can really just get up in the morning and get to work, doesn’t need to have much direction, is able to stay focused and

accomplish a lot. So very much a self-starter and somebody who is intrinsically motivated rather than extrinsically motivated.”

Parents of students who were unsuccessful online learners often responded that students could be more successful if they kept to a schedule or a daily plan and were self-motivated. For example, Michael shared that Gabe was capable of high level work “...if you can get him to do the work and apply himself. And that’s the real challenge with Gabe is the motivation and discipline to keep at it.” Both Hillary and Michael were sharing the same attribute of self-motivation, but sharing from different paradigms.

While interviewing the participants in this study, three main stakeholders emerged as present: parents, school, and students. Though the focus of this study was primarily on parental guidance and student success in the online environment, the full-time, virtual school also plays a role in facilitating parent and student success.

### **Communication: A two-way street**

Educational research in both brick and mortar and online settings indicates the importance of communication between school and home (Archambault et al., 2010; Black, 2009; Diaz & Entonado, 2009; Hawkins et al., 2011; Mandernach, 2009; Thomson, 2010a). Participants report communication with the school affects success in an online school (n=45). Parents also discuss the effect not communicating with the school had on the achievement of their children. When asked specifically about the frequency of communication with instructors or administrators, answers from the eight participants varied. Two participants communicated with staff as needed, three indicated communication occurred about once a week, one indicated they communicated with staff up to three times each week, and the last two indicated the frequency of communication was once per month. Electronic communication was more frequent, ranging

from daily (n=2) to once or twice per week (n=4) to every time email was received (n=1). One participant was unsure about the number or frequency of email communication with the school.

Communication with families at various points on the educational spectrum is highlighted in the literature. Thomson (2010a) notes academically gifted students learning online benefit from frequent and prompt communication from instructors, whether it is directed at the entire class or individual students. Additionally, at-risk students can benefit from positive relationships with caring adults, including school personnel (Archambault et al., 2010; Cavanaugh, Repetto, Wayer, & Spitler, 2013). All students can benefit from increased association with caring adults.

The most successful students in the current study were those who had parents who communicated with the school regularly. Many parents reported checking electronic mail daily and calling teachers or school personnel regularly. Parents also spoke about communication coming from the school as positive, especially as they realized that student-teacher ratios at OHS are high, and teacher time is valuable.

Just like in brick and mortar schools, relationships with school personnel are important in online schools. While parents had mainly positive experiences with teachers at OHS, all of them indicated the students would have connected with teachers more deeply had they been face to face. One parent relayed a very negative experience with a teacher that he felt was part of the reason his student dropped out of school. Another participant admitted that when her children were enrolled in a full-time, online school, she did not reach out to the teachers for help or resources, and her children are behind in credits as a result.

Regarding communication, participants also suggested the school communicate more fully about the resources provided to parents with the goal to help students be more successful.

Multiple participants recommended in the first stages of learning online that the school provide connections and resources to parents, including partnering them with veteran, successful parents, to utilize for assistance. Experiences with training were varied as Michael, Maria, and Melody all indicate training information from the school was sufficient. Cari advocates on-demand parent training to increase knowledge of how to operate the learning management system (LMS). She mentioned by the time the first days of school arrived she needed to fully understand how to navigate the LMS in order to help her son be more successful, and on-demand parent training could have improved that experience. Researchers suggest if time spent on the LMS is the most statistically significant variable to student success, then the LMS needs to be effectively organized for students (Liu & Cavanaugh, 2011, Roblyer et al., 2008). Participants in this study would add that parents need to understand how to use the LMS so they can assist their children, and indicate the necessity of the school communicating LMS training for families. Elizabeth cautions online schools that too much parent information can be overwhelming, and to provide it in usable chunks.

### **Transparency: Coming up vs. catching up**

Whether parents were relating past school experiences, speaking about current practice, or advocating for an increase, transparency in online education was indicated as an important way for schools to help students be more successful when learning online. Parents often spoke of the transparency the school provided in terms of electronic tools making it possible for them to help students be more successful. The experience Michael shared about his son, Gabe is illustrative of multiple participants in this study. He notes:

“In a traditional school, we were kind of behind the curve of knowing what was done and what wasn’t done. Because he would tell us everything was fine, paint a pretty

rosy picture until we found out that wasn't the case, and it was too late. It was a little different with the online school because we were closer to the real time of when he wasn't getting his work done.”

Multiple parents shared similar experiences regarding students who were academically successful in the online environment and those who were not. Both Maria, Elizabeth, and Cari selected to send their students to OHS hoping increased transparency would allow them to help their students be more successful.

A recommendation by Black (2009) is that online schools create systems for giving consistent and regular feedback to parents. This is an example of one of the problems with generalizing research conducted at online course providers to what happens in full-time, online schools. OHS has an extensive set of tools available for student and parent purview inside the Learning Management System (LMS). Students and parents have continuous access to student grades, time spent in each unit or lesson within a class, and on demand recordings of live class sessions. Maria shares that having this transparency is the best part about having her students in an online school. Maria notes:

“Knowing what your kids are doing and knowing their grades and how they're doing in school and seeing, you know, that's the best part. Knowing exactly what they're doing and being able to see their grades and their schoolwork, and they can't just say, 'Oh yeah, I did it' when they didn't. I like that part.”

While there is no peer-reviewed research about transparency in the online environment beyond the recommendation made above by Black (2009), participants in this study consistently pointed to the transparency of the virtual school technology system as a contributing factor in parents' ability to help students be successful. The experiences of the participants indicate that technology

is a barrier for students who are unsuccessful in the online environment. For parents who identified children as being less successful learning online, 22 instances during the interviews technology challenges were listed as a barrier to learning. Parents reported that when students could not log in to school, it was a readily available excuse to stop participating, and parents needed technology to work so that students would persist. In only two instances did parents of more successful students cite technology as a concern for their children. Technology should be transparent rather than a barrier to students while learning online (Kerr, 2009; Rice, 2009).

Transparency in technological systems can help students understand expectations for course assignments and increases feedback to parents (Black, 2009; Duncan & Barnett, 2009). Parents of online learners add to the literature when they advocate for full transparency in systems so they can monitor the progress of students. Participants with experience having students in both traditional and online school settings point to the tools available in the fully online setting, such as OHS provides, being superior and more transparent than experienced in the brick and mortar school.

### **Individualization: Learning is not one-size-fits-all**

For the participants in this study, individualized instruction proved far more important to parents who identified their students as being less successful than those whose students had been successful in the online environment. Thirty-six times in the five interviews conducted with parents of less successful students, participants mentioned the need for individualized instruction for students versus being cited five times in the other three interviews.

Online learning provided the freedom to minimize distractions or amend schedules to individualize instruction for students with unique needs. Archambault et al. (2010) support the participants in this study by noting at-risk students who are enrolling in online schools could be

better supported in learning by utilizing small group or individualized instruction, mastery learning or ABC not yet type programs. All of these options give students more freedom and flexibility in learning. Mastery based learning alone may not be sufficient to meet the diverse needs of students at-risk of failing.

Multiple participants in this study expressed the need to increase awareness of student strengths and weaknesses, designing an educational experience that suits individualized learning. Hilary, a university administrator, noted the difficulty of providing individualized education for students. Hilary noted:

“It’s one of the challenges of public school administration, of any kind, you know, whether it’s online or bricks and mortar, that you’re trying to meet the needs of so many different kinds of students with a fairly limited set of resources.”

Hilary reveals the reality that lack of resources is a barrier to individualized instruction in all educational settings. Black (2009) and Moore (1993) both identify additional obstacles when speaking about the high student-teacher ratios in online schools, and the considerable distance separating student and teacher. The administration and faculty at OHS struggle to meet these challenges daily, and parents recognize those challenges, but are still looking for solutions for their own children.

Parents enrolling students in an online school were hoping technology could fill this need to individualize instruction for students. For some, online learning and the transparency a virtual school provided did make a difference, and allowed them to tailor education to their students. For others, the current online education system was not individual enough. Michael gave some suggestions for future course designers. He notes:

“Nothing is impossible. In fact with technology, I suspect you could probably do it [tailor curriculum to each student]....How would you determine which one works for that person? So if you have a curriculum that was divided into different styles of teaching, and then even within that you’re going to have students that want to move really fast, students who grasp it really quickly, students who move a lot slower, students who like interactive things, other students just say ‘let me read it,’ and other students will want to have a lecture or video, they’re better at video than they are at audio. I don’t know but I think you’d have to have a variation of that entire [curriculum] put together, and then the students can maybe pick what helps them best out of that.”

Though he may not have known it, Michael was describing intelligent adaptive learning. This emerging technology may make completely differentiated instruction a possibility for students (Dreambox Learning, 2012). Because this technology is just entering the discussion, there are no peer reviewed studies to determine effectiveness or impact on student achievement. Responses from participants in this study indicate a desire for individualized technology to improve education for their particular students.

Whether it is in the allocation of resources, teaching to student strengths, mastery learning, or interactive technology, parents are looking for education to cease being one-size-fits-all, and to be individually tailored to meet the needs of their students.

Parents in this study express that students must be self-motivated, fully participatory, and accountable in order to increase achievement in the online learning environment.

### **Self-Motivation**

The themes of self-motivation, self-efficacy, or self-direction are consistent themes found in research regarding successful students in online school environments (Artino, 2008; Rice, 2006; Roblyer & Marshall, 2002; Ronsisvalle & Watkins, 2005). Participants in this study indicate parental involvement encourages students to increase self-motivation or self-reliance. The necessity of students being self-motivated to achieve success in the online school was the top concern for parents of non-successful students (n=41). Self-motivation was in the top two responses for parents of successful students, being mentioned 35 times during the interviews. 100% the students who were identified as successful going to school online were also identified by parents as being self-motivated or self-directed. Additionally, all parents who identified their children as being unsuccessful indicated that self-motivation would have increased success for their own children.

Evidence shows when learners have some control over their learning environment, they are more successful (Cavanaugh et al., 2013; Kerr, 2009; Rosa & Lerman, 2011; Thomson, 2010a; US Department of Education, 2009). Parents of children who are showing academic success and exhibit self-motivation indicate they are able to allow students to set their own schedules (n=11) and have choice in preferred activities (n=25). They also suggest students who are self-motivated do not need as much monitoring as others (n=13). One parent said once her child demonstrated she was going to be successful learning online, she just had to add water and watch her grow.

Not all of the participants in this study would agree with the idea that increased freedom equates to increased success. Online learning is full of freedom and independence, yet over half of the participants in this study had students who failed. Most parents indicated too much freedom is detrimental to student success. One parent pointed to flexibility and freedom in

learning as the reason her children are currently lacking the credits to graduate with their cohort group. Many students thrive with the freedom to make decisions about their own education as is noted in the literature, but the question remains does the choice and/or control create success, or are successful, self-motivated students inherently ready for freedom and control? It is not clear from the literature which is the case. Parents of students in this study would indicate additional choice or freedom without consistent involvement by parents could result in increased failure rather than increased success.

Participants also encouraged other parents considering enrollment in an online learning environment to examine the level of self-motivation or self-direction exhibited by the student to determine if online learning would be the best placement. Michael clearly stated that if the student is “unsure about what you want to do, or you’re hesitant or don’t really care for school, I think online school is a disaster.” Nathaniel echoed the thought that students must be motivated to go to school online. He noted:

“Ask them [other parents] if their child is highly motivated. If they are, I would say by all means, online school is a very good option. And if they were struggling to pay attention or to do their work in a brick-and-mortar school, I’d tell them to be very wary of it.”

One finding from this study was the most important characteristic of a successful online learner is belief in the learner’s ability or self-efficacy. Participants in this study echo the finding that self-motivation or self-efficacy does affect student achievement. Parents report that parental roles and level of involvement change with the level of self-motivation for the student.

Participants also advocate assessing the level of self-direction of the student prior to enrolling in an online school.

## **Student participation and accountability**

Research in online education supports the need for students to be motivated to participate and complete courses (Archambault et al., 2010; Artino, 2008; Picciano & Seaman, 2010; Roblyer & Marshall, 2002). In a full-time, virtual school, when school and family are so interrelated, it is important not to forget that participating students are vital to the equation. Participants in this study indicated students must be full participants in their education in order for online learning to be successful (n=49).

Parents of students at OHS corroborated Artino's (2008) finding that online learning does not work effectively if students are not involved or engaged. Nathaniel and Cari shared they had to sit with their children to get any participation from them. Cari related her experience with Christian going to OHS as a "full-time job"; if he was in class or working on an assignment, so was she. Christian would not participate and was not successful, even with that level of parent support.

Michael mentions if students are not independent or accountable, the online school is not going to "light a fire under them." Maria found just the opposite to be true for her children. Both Brock and Aria had attended regular public and brick and mortar charter schools prior to enrolling at OHS. In Maria's opinion, they were academically unsuccessful in their former schools, but this changed, especially for Aria, upon enrolling at OHS.

College students with prior online school experience during high school, who had successfully completed some of their education through an online program, were more likely to attend brick and mortar colleges and universities rather than trade schools or community colleges (Kirby, Sharpe, Bourgeois, & Greene, 2010). Nearly all students interviewed credited experiences learning online as preparing them to be more independent, responsible and self-

disciplined in their postsecondary studies. They found students indicate their experiences attending school online helped them develop independence and self-discipline needed to excel.

Experiences relayed by participants such as shared by Maria above, indicate the findings in Kirby et al. (2010) are accurate for some students. Other experiences related by parents of less successful children denote when students are not accountable or participatory in their own education, the benefits of increased self-motivation or the hope for added independence go unrealized. Multiple parents, who had difficulty eliciting participation from their children, thought it might be easier to do the work for their children than to fight them to participate; however, all noted even that would not have been effective. According to the parents in this study, no amount of parental involvement will be able to overcome an unwilling student.

### **Parents--Monitor, Mentor, and Motivate**

Multiple studies addressing student success in the online environment list parental involvement or adult mentoring as an important factor of that success (Archambault et al., 2010; Black, 2009; Cavanaugh et al., 2013; Feng & Cavanaugh, 2011; Liu et al., 2010; Liu & Cavanaugh, 2011; Repetto et al., 2010; Roblyer & Marshall, 2002). While studies identify the importance of having a caring adult or mentor to guide students while they are in the online environment, none discuss the perceptions or roles of parents in an online school. Research question two endeavored to uncover the perceptions of parents concerning their role in the achievement of their children while enrolled in a full-time, online school. In all cases, parents reported their roles to be that of monitoring, mentoring, and motivating.

Individuals who participated in this study were all actively engaged in the education of their children. All indicated they communicated with teachers multiple times each month, checked their students Learning Management Systems (LMS) several times each week, asked

their children about their school work every day, and helped with assignments many times each week. Those who indicated their students were not successful in an online school as evidenced by failing courses, dropping out, or being credit deficient, reported they were diligent in their roles, but were unable to get their students to participate.

When asked about time commitments of parents with students at an online school, parents reported they spent much more time engaged in learning with their students while they were in an online school than they spent when students were enrolled in a traditional school. If a student was spending 30 hours per week engaged in school activities, parents reported a mean of 13.8 hours spent engaged in learning with the students. The range was from two hours through 29 hours for the parent for every 30 hours the student spent. Parents of successful students reported spending less time with their students once routines were established. In sixteen instances, it was noted students who were more successful did not need as much monitoring as other students.

Beyond the time commitment, parent participants noted they felt that monitoring children included questioning about assignments, monitoring assignment completion (n=68), setting a schedule for/with the student (n=44), and advanced preparation of student materials (n=22).

Several studies have found negative correlations between parental involvement and student achievement at brick and mortar schools. Chen and Gregory (2009) and Fan and Williams (2010) both indicate parent communication with the school has a negative relationship according to student perceptions. Both authors postulate a reason for this negative relationship may be that by the time parents communicate with the school, students are in trouble due to a lag in academic performance or because of disciplinary issues. Only parents of less successful students related perceptions indicating monitoring causes conflict (n=12). Nathaniel remembers

many nights, after working all day, coming home to sit with Brian to ensure he was completing some work. He shared about half of the time, this level of monitoring caused discord, and Brian's work would remain unfinished.

Much of the research related to parental involvement is conducted in elementary settings and parental involvement abates as students get older (Catsambis, 2001; Chen & Gregory, 2009; Epstein, 2001). High school parental involvement research often centers on the relationship between parental aspirations and future success, or relationships between parents attending school activities and student success (Catsambis, 2001; Chen & Gregory, 2009; Fan & Williams, 2010; Mo & Singh, 2008). The type of daily monitoring required for parents of children in a full-time, online school is more like the teacher in the classroom. Participants in this study noted their roles being like a teacher many times (n=18) as well as providing advanced preparation of materials and/or schedules for students (n=55). Current research studies do not include effectiveness of this level of involvement and monitoring for parents. Chen and Gregory(2009) found high school students would prefer their parents to support them from afar. Researchers make the assertion teenagers would like their parents to be involved by expectation rather than by monitoring their homework or serving with the parent teacher association. The authors further explain this may be related to students asserting their autonomy in this stage of their lives.

Even with conflict or the possibility of negative relationships between parental involvement and student perceptions, the participants were clear that in the online learning environment monitoring was important to student success, and lack of parental involvement could result in failure. Shelli shares that both of her students are behind their graduation cohorts because of lack of monitoring in the later years that the boys attended online school. In the early years, when the boys were in elementary and middle school, Shelli's husband was able to be

home with them during the day to monitor their education, but a job change meant that both boys were home alone. Shelli shared:

“This last couple of years, the boys were kind of a little more on their own. So that’s kind of where we started to flounder, is because we weren’t here to...what do you call it? Keep an eye on them. And so basically, the older they got, the more we trusted them that they did their work, and they were doing what they were supposed to be doing, and they were doing the work while we were gone at work...I hate to admit, because they’ve got the whole house to themselves and they’ve got, you know, access to TV’s and video games and computers, and you know, so it was easy for them to want to slack off because they had nobody at home to monitor them.”

Along with monitoring progress at school, parents interviewed for this study indicated student mentoring was important when going to school online. Students are seeking connections and mentoring (Catsambis, 2001; Chen & Gregory, 2009). One way parents mentor students is by being available for them for immediate feedback. Thirty-eight times this theme of immediate feedback was discussed by participants. Parents encouraged students to reach out to teachers but knew that being available to help students when needed or requested made a difference in achievement for students. While there is a gap in the professional literature regarding parents providing immediate feedback to students, one study did indicate that students in a distance education program who got electronic feedback from teachers (more immediate) versus feedback by mail (less immediate) had greater academic achievement on the final exam in the course (Lemley et al., 2007). Being careful not to over generalize, parents of both successful and unsuccessful students discuss part of their roles when students are in a full-time, online school is

that of teacher (n=13). If parents are taking the teacher role, then more immediate feedback received from present parents could increase achievement.

Coupled with being available to answer questions or increase student understanding, parents report that a very positive element of their role included spending time with students and engaging in learning with their children. Mo and Singh (2008) found a relationship between positive parent/child interactions and increased student engagement in a traditional school setting. All of the parents in this study were engaged in the home environment with their students. They all report positive relationships with students, and point to experiences in the online learning environment as enhancing parent/child relationships. Because all learning happens in the home setting, often with parents present, all parents reported enjoying learning about student academic strengths and weaknesses (n=26). A benefit of children attending school in a full-time, online school is parents can try to motivate their students as they have an intimate knowledge of children and their needs. Many parents point to motivating students as important to their success. Cari talked about her increased understanding of her son, Christian and his ADHD. She shared:

“I learned a lot about Christian. About how he thinks and how he learns. I actually recognized more of the struggle he has to put thoughts together with the ADHD. I mean, that challenge, [I] understand a little bit more about how that makes things harder for him to put things together. Not that it’s impossible, but I can see the hurdles that he has to go through to do that. I did think it was a positive thing to get to know him better and do spend that time with him.”

Where some of the parents would question the finding above in Mo and Singh (2008) is in the claim of increased student engagement. Parents who could not engage students in high school

curriculum by sitting with them, attending class, or encouraging, would not say improved parent-child relationships amplified student engagement in school.

A unique aspect of full-time, online schools in this regard is parents can, and often do, attend class with their children. Multiple parents noted working through assignments and projects with students regularly. On occasion, a second time through the course for the parent helped their own attitude toward a difficult subject. Parents indicated 44 times during the interviews that time with their student, whether it was struggling through a proof in geometry or just being able to eat lunch together, was a positive outcome of being part of a full-time, online school. Parents of students interviewed for this study suggested an important parental role in an online school is motivating their children to strive to attain a better future. Research conducted in brick and mortar settings suggests parental aspirations for children are related to future student success (Catsambis, 2001; Chen & Gregory, 2009; Fan & Williams, 2010; Mo & Singh, 2008). Researchers suggest parents who discuss with their children their future expectations positively affected the academic success or failure of those students. Fan and Williams (2010) also found a strong correlation for parental aspirations. They suggest high school students who knew their parents were engaged in their education exhibited increased confidence in their own abilities and were more interested in school. All of the parents in this study shared specific hopes and dreams for their children, taking opportunities to impart those expectations and dreams to children directly through conversations and by example. When a student struggles to succeed in school, parents sometimes have to re-evaluate their aspirations for that particular student. Nathaniel discusses this experience when his son, Brian dropped out of school and took the GED test rather than earning a high school diploma. He shared:

“When your child is born, you have certain expectations and hopes. And as they get older, you discover that they have a mind of their own and interests of their own. And as a parent, you try and adjust your dreams and aspirations and try to help them succeed. I guess that’s how we’ve dealt with it. It’s been a very painful process though.”

Parents continue to share aspirations with their students through school and beyond, hoping to affect the future for their students.

Aspirations research is effective for students who are successful in school, and researchers show that it makes a difference in academic achievement (Catsambis, 2001; Chen & Gregory, 2009). The participants in this study all explicitly shared their hopes, expectations and dreams with their students, yet, over half of them failed. They were involved in student activities from booting up the computer through checking grades on the assignments, yet sometimes they could not rouse students from their beds. Parental involvement and parental aspirations did not improve student achievement for the two students who dropped out of OHS and never finished a high school diploma. In this way, the shared experience of parents does not match some of the current literature regarding parental aspirations affecting student achievement.

In fifty-seven instances during the 16 interviews, parents determined helping students discover the relevance or importance in their own education as a factor to increase success. In this study, parents repeatedly related their experiences with children acknowledging the importance of education as a factor in their success. Maria’s experience with Aria illustrated student awareness of the relevance of an education in their lives can make a difference in performance. She stated:

“I think she [Aria] has finally learned the importance of school and an education.

I don’t think she cared before. It was all about boys and socialization. And she’s come to

realize that school is important; it's something you need. You need an education to go on.

And I don't have to make her, and I used to nag her all the time.”

Michael, whose son Gabe struggled to find relevance in school, encouraged parents to be supportive of students and to guide them toward an understanding the importance of planning for the future. Michael stated:

“Every child is different and so you just have to find what their skills are and try to build upon those skills and try to keep them vested in their future, recognizing the fact that I think the hardest thing with teenagers is to get them out of the here and now. That they will actually have a future and they should probably do something now to prepare for that.”

Students like Gabe and Aria have different educational experiences and outcomes, but their parents have the same desire for them. Parents recognize education is the key to a better future and a more productive life for their children. Even if children do not understand educational relevance currently, parents hope they will someday grasp those ideals to create a better future. It was because of this hope that parents made the sacrifice of time and energy to monitor, mentor, and motivate children while they were enrolled at OHS. The experiences of parents in an online school indicate that in a full-time, online school, the primary roles of the parent are to monitor, mentor, and motivate.

## **Conclusions**

No single factor affects student achievement in a full-time, online high school. The shared perceptions of participants demonstrated achievement for students is affected by the performance of school, students, and parents. Scholars and parents agreed that the online school must communicate effectively in multiple ways with both parents and students (Archambault et

al., 2010; Black, 2009; Diaz & Entonado, 2009; Hawkins et al., 2011; Mandernach, 2009; Thomson, 2010a). Parents agreed full communication about resources would encourage families to engage in school more effectively. The experiences of parents add to the literature when they advocate for parent training on demand and partnerships with veteran parents during school start-up. Parents also illuminated the fact that when parents do not utilize the resources provided by the school or communicate with school personnel, students fail.

Participants in this study overwhelmingly appreciated the transparency provided for them in the LMS. Parents had full and continuous access to student grades, progress, time spent on lessons and units, and on-demand recordings of live class sessions. Parents indicate that knowledge of student progress gave them the tools they needed to assist their children. Scholars do indicate that time on the LMS is a significant variable related to increased academic achievement (Liu & Cavanaugh, 2011; Roblyer et al., 2008). The school must provide transparency to families through tools in the Learning Management System and information about student growth to parents. Parents of students who were not as successful were grateful for the tools provided by OHS, but transparency alone did not motivate or inspire increased success when learning online.

Finally, schools must also seek to individualize the student learning experience. Parents of students who were already struggling in school sought out a different experience for their children at a full-time, online school (Morabito, 2011). In some instances, the flexibility and control students had online was helpful and motivated students to be more successful as the literature indicated (Cavanaugh et al., 2013; Kerr, 2009; Rosa & Lerman, 2011; Thomson, 2010a; US Department of Education, 2009). In other cases, that freedom increased failure. Emerging technology utilizing adaptive computer testing to fully individualize the student

educational experience (Dreambox Learning, 2012) is promising, but too new to be vetted by research. Parents of children who were unsuccessful in the online learning environment admitted their children have been unsuccessful in multiple school settings, but indicate again they are looking for education to adapt to fit the particular needs of their student. It is in this way that they believe their children will experience success.

Students must be self-motivated, engaged in curriculum as a full participant in their own education, and held accountable. Research in online education supports the need for students to be motivated to participate and complete courses (Archambault et al., 2010; Artino, 2008; Picciano & Seaman, 2010; Roblyer & Marshall, 2002). Parents of children who were self-motivated, fully participating, and accountable found the transition to a full-time, online school to be pleasant and rewarding. They not only watched their children achieving and thriving in the online environment, but also could participate in learning themselves. Parents who identified students as not being successful were very involved, sometimes sitting with students for every lesson. Yet, they struggled to get students out of bed some days, and half of the children failed. Their experiences validate the research that students who are unwilling participants will not be successful learning online. While there is limited literature regarding the consequences of not being motivated to participate, the experiences of parents adds to the body of knowledge noting when students are not accountable or participatory in their own education, any benefit of increased independence or self-motivation provided by going to school online are unrealized. Parents are critical to the success of their children by being available to monitor, mentor, and motivate on a daily basis. Parents perceive their role as vital to children being successful. The parental roles vary based on the motivation level of the child, with self-motivated students needing reduced involvement from parents than less motivated students. Unfortunately, there are

occasions when parents are unable to inspire their children to be active participants in their own education. In those instances, students are unsuccessful and often fail. If students are unwilling to be involved in their own education, and parents are unable to motivate them, it is rare that an outside force, such as the school, would be able to either.

The question regarding the factors affecting student achievement in an online school is as complex as the students who enroll. Students are not widgets, and cannot be expected or predicted to always act a certain way. That is what makes education of all types so complicated. Students are influenced by continuous involvement by their parents when they are going to a full-time, online school. As was evidenced by the experiences of the parents in this study, all of those variables influence success or failure of students, but unfortunately, not one is the solution for all students.

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**THE EFFECT OF PARENTAL STRUCTURES ON HOMESCHOOL  
ACADEMIC ACHIEVEMENTS**

Title: The Effect of Parental Structures on Homeschool Academic Achievements

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## **ABSTRACT**

The rebirth of homeschool is expanding the format of education. As parents consider alternative options of education, the need for in depth knowledge is pertinent. The objective of this study was to determine the relationship between specific variables of homeschool parental structures, culture, age, and gender against eleventh grade homeschool academic achievements. This study examined the parental structures impact on the eleventh grade homeschooled student's academic achievements. To accomplish this study, six research questions guided the investigation into homeschool parent(s) demographics to determine if a relationship existed between the parental structures and the academic achievements of the eleventh grade homeschooled students. The study utilized a quantitative research methodology that employed a demographic questionnaire and archived data as the data collection method. The demographic questionnaire evaluated the parents (a) gender, (b) culture, (c) sexual orientation, (d) age, and (e) relationship status. The results of this study implied that the majority of parents who homeschool students in the eleventh grade are married females of white decent between the ages of 30 to 50 years old. It was also determined from this study that a positive relationship exists between married couples and academic success of eleventh grade homeschooled student. This study affords knowledge to parents on how parental structures impact the academic success of homeschooled students.

# **Improving the Design Framework of Problem-based Instruction in Mathematics Based on the Student Model**

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## **ABSTRACT**

We proposed an online design framework for problem-based learning in mathematics and developed e-learning materials in HICE 2013. In the present paper, we revise the design framework based on results of trial lessons and improved the e-learning materials. Secondly, we employed it to conduct new trial lessons, and assess the effects of this revision. Thirdly, we discuss a student model that outlines the required elements for students to perform mathematical problem solving in their daily lives. We conclude by revising our framework and e-learning materials based on the results of the new trial lessons, and the student model.

## **KEYWORDS**

Mathematics education, Upper secondary school education, Problem-based learning, Mathematical views and ways of thinking, Instructional Activities Game, E-learning, Student model

## **INTRODUCTION**

### ***The issue of “problem-based learning” in high school mathematics in Japan***

According to the PISA 2009 survey (OECD, 2009), Japanese 15-year-old students achieved the highest scores on the mathematical portion of test. However, a National Institute of Educational Policy Research [NIEPR] (2007) survey revealed that 17-year-old students could not reach a satisfactory score level on the Mathematics-I test, which consists of problems that students should be able to solve at 15. The survey also asked students' attitudes toward mathematics; results showed that the percentages of students who replied, “mathematics lessons are enjoyable,” “mathematics is useful in daily life,” and “I

tried to use mathematics in daily life” were very low.

In order to improve this situation, the National Course of Studies (NCoS) was revised in 2009. The revisions introduced problem-based learning into the compulsory subject “Mathematics I” and one of the optional subject “Mathematics A”. The introduction of problem-based learning was intended to raise students’ interest and motivation, cultivate their use of mathematical views and ways of thinking, and prompt them to study mathematics independently by making time for performing authentic learning activities (Ministry of Education, Culture, Sports, Science and Technology [MEXT], 2009). In addition, problem-based learning was expected to prompt students to employ information and communication technology (ICT) in a positive manner in order to use mathematics in daily life.

However, it is doubtful that problem-based learning will play this role in the new curriculum—no MEXT-authorized textbooks provide appropriate problems, and few textbooks provide appropriate instructions for problem-solving strategies. This situation is unlikely to change, with Matsuda and Masuda (2011) noting that student teachers could not make appropriate lesson plans for problem-based learning. Although teachers could explain the necessary features of problem-based learning oriented lessons, the problems chosen for lesson plans were not concerned with daily life and each had a single correct answer. Teachers were, therefore, forced to explain the problem solving method of each problem for learners to reach the correct answer. Moreover, teachers did not change problems which selected for lesson plans and did not use ICT in the lesson plans, even though they were pointed out issues in their lesson plans with performing microteaching.

### ***Development of e-learning material for problem-based learning in mathematics***

In order to improve the present teaching situation, Ito and Matsuda (2013) developed a lesson plan and e-learning materials appropriate to use in problem-based learning.

- 1) We saw the objective of problem-based learning as cultivating the ability and positive attitude towards solving problems faced in daily living using a mathematical approach.
- 2) We believed that, rather than scientific problems, technological or social-scientific problems should form the core topics of problem-based learning lessons; such problems are suited to being approached from both a practical and a statistical standpoint.
- 3) We posited that it was necessary to emphasize the plurality of available answers, which are dependent both on the different formulations of a problem and the different data used for analysis. To do so, we provided a problem in the form of an ambiguous expression. We also decided to provide two or more data items, or not to show all of the data at the outset, providing it to students progressively. In order to do this, we made a learning process cycle following the four sub-processes defined by revising Hirabayashi and Matsuda (2011)’s framework: problem understanding, generation and assessment of alternatives, decision making, and reflection. Furthermore, we constructed a lesson plan by repeating the cycles with changing situations, and

a range of factors, both simple and complex.

- 4) We supposed that each e-learning item should be completed within 50 minutes. Therefore, we suppose that each cycle should be designed to be as short as possible so that all students can finish the minimum number of required cycles during the lesson.
- 5) When we guided students towards a problem-solving method, we prompt them make an appropriate decision given a particular set of choices without spending too much time on calculations, diagrams, etc. On the other hand, when we prompted students to practice the use of the method, we asked them to generate various alternatives and make decisions about choosing mathematical ways of thinking, methods to employ them (including methods of calculation and diagram drawing), and ways of interpreting the results.

The topic for this lesson is “Which choice leads to more profit: employment immediately following secondary school or after graduating university?” This problem has no specific answer, and there are many approaches to solving it.

In the first cycle, we explained the basic process: evaluated profit according financial value, showed the annual income data of workers from 24 to 40 years old, and then prompted students to compare the sum total (lifelong wages). In the second cycle, students were prompted to consider the income earned by workers aged 18–24 years old, in order to examine high school graduates and tuition for obtaining a Master’s degree at a university. Because the data we showed in the first cycle did not include the incomes of workers aged 18–24 years, we guided students toward a method of estimating them by applying a function to the data. We provided a linear function, a quadratic function, an irrational function, a logarithmic function, and an exponential function, which may be chosen in Microsoft Excel. In the third cycle, we prompted students to estimate the income of workers over 40 years of age in a similar way. In the fourth cycle, we prompted students to consider expenditures other than tuition. In the fifth cycle, we prompted them to consider different views of profit.

To aid students in understanding the problem, we presented them with different alternatives for problem solving. To help choose between alternatives, we prompted students to consider which functions were suitable for extrapolating and interpolating. Then, we showed students the function chart and asked them to choose the most appropriate equation. Following this, we asked them to read numeric values of  $f(X)$  corresponding to a given  $X$ , for all functions. During the decision-making process, students chose the best approximate function. After reflecting, they concluded which scenario yielded more profit by assessing the predicted results. Following this, we suggested that it may be important to consider other factors. In the process of evaluating and reflecting, we prompted students to consider whether the specific conclusion we reached was adequate, and showed the implications of choosing other factors

After such a lesson, students appreciated the usefulness of functions, and began to feel that mathematics was practical in daily life. Moreover, in line with problem-based learning, many students were able to apply the method that they learned to the material, discover their own dilemmas in daily life,

build hypotheses in their own ways, and collect information and solve the problems. Nevertheless, several issues emerged.

- a) Because we let all students experience the same activities, the lesson could not fit the individual differences between students.
- b) Because of time restrictions, we omitted the Rational Judgment process contained in Hirabayashi and Matsuda's framework. Therefore, the student might have come under the impression that any function may be applied instinctively, without evaluating the validity of the choice.
- c) Some students did not understand the appropriate manner of problem solving using a mathematical outlook, and submitted reports did not achieve the goals of problem-based learning.
- d) In the Review process, emphasized letting students recognize that it is not easy to judge "Which choice leads to more profit?" rather than letting them review adequacy of their problem-solving activity. However, since one of the learning objectives was to improve students' performance on problem-solving activities, it was necessary to let them review their activities.

In addition, we needed to discuss the guidelines of the e-learning materials in greater detail in order to develop the materials for various problems.

## **PURPOSE**

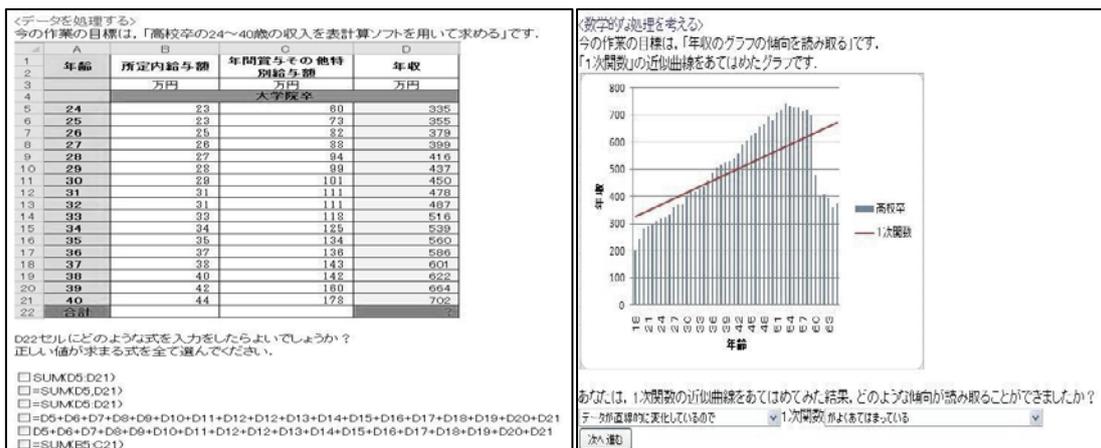
In the present paper, we improve our e-learning material and our design framework. In addition, after conducting new trial lessons for formative evaluation using the revised material, we discuss a student model for improving and refining our framework with reference to the obtained results.

## **REVISION OF THE MATERIAL AND THE DESIGN FRAMEWORK**

The following revisions pertain to issues discussed in a) – d) in the previous section. Improvements are listed with corresponding capital letters.

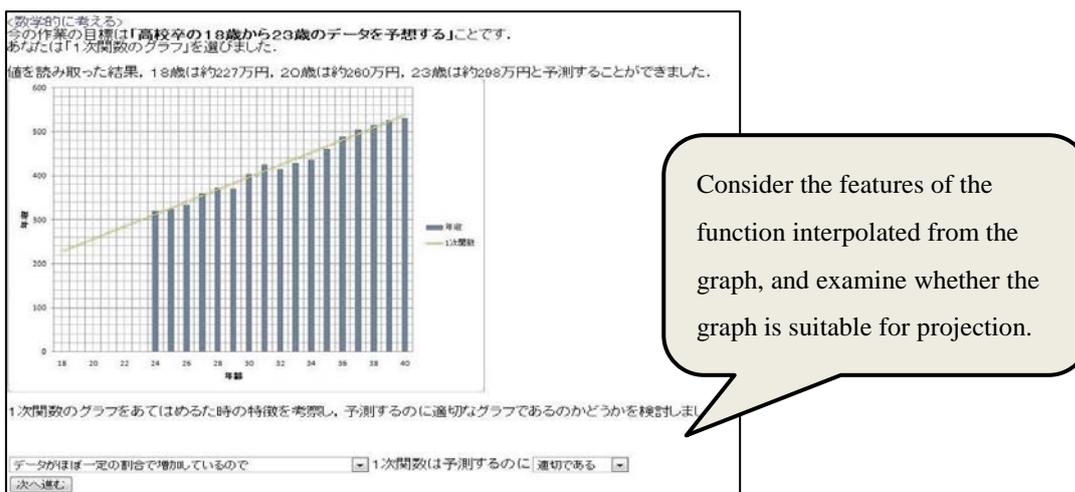
- A) As MEXT (2009) mentioned, in order to solve daily problems through mathematics, ICT use is helpful but not required. Therefore, we added a choice to the mathematical understanding aspect of the process to provide students with the skills to use Microsoft Excel (Figure 1 - left). In this task, students were asked to consider a formula to be entered into a cell, learned how to make a graph, and approximate functions. This task can be added to various e-learning materials for

problem-based learning. Moreover, in order to cultivate the ability to examine and express phenomena mathematically, we asked students to consider the kinds of features that a function must have according to a particular graph. For example, in this case, it is desirable to apply a linear function from 18 years to 55 years and a quadratic function whose inclination is negative after 55 years, but it depends on students which function is applied. In addition, students were prompted to examine whether an error between the values derived from the function and the data was sufficiently small (Figure 1 - right).



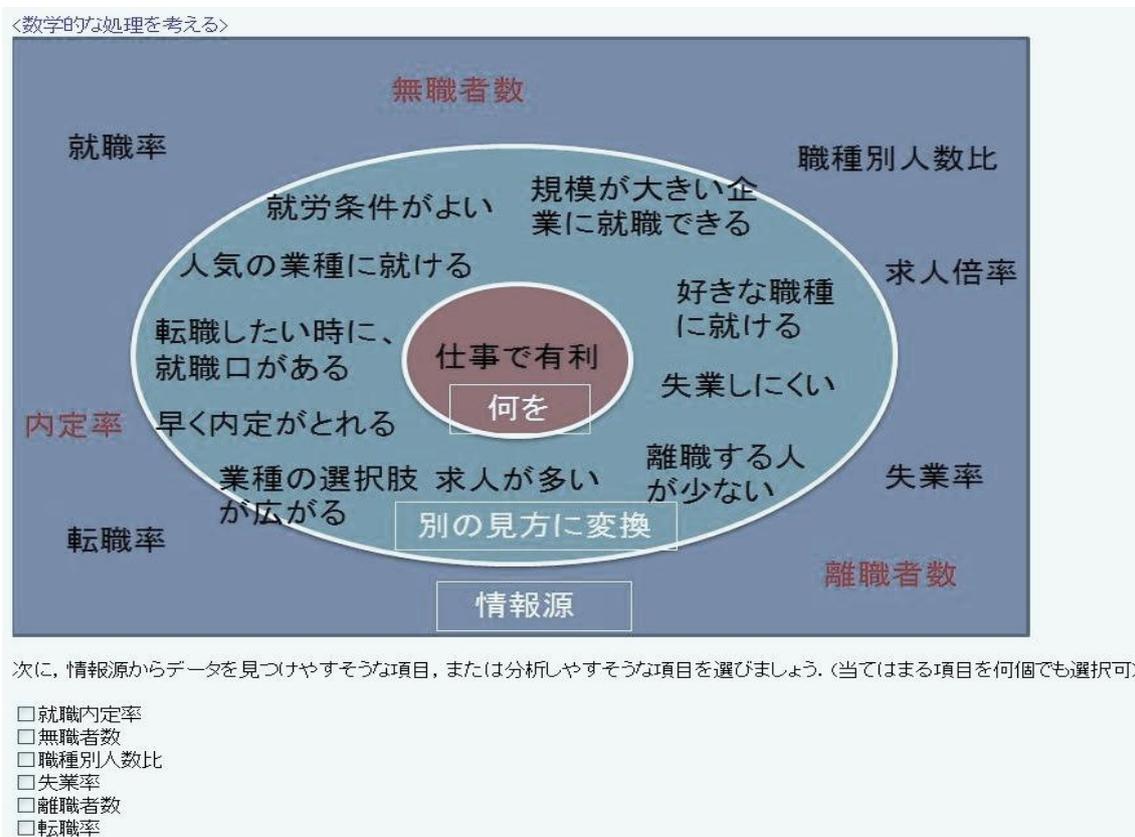
**Figure 1**  
Activities using Microsoft Excel in cycle 1.

B) We added the rational judgment process in order to examine the validity of each available alternative. In order to employ practical ways of thinking, we asked students to examine aspects such as the validity of the range of values stemming from a particular function (see Figure 2).



**Figure 2**  
Examining the validity of selected function in the rational judgment component.

C) Before solving the problem, we explicitly showed the rubric discussed in D) as an advanced system of organization (Ausubel 1963) that outlines the flow of problem solving, and guides the use of mathematical approaches. In addition, although we let students consider benefits other than money in cycle 5 of previous material's iteration, we did not explicitly guide them to treat it mathematically. We simply offered that they use the method to generate ideas, as shown in Figure 3; let students express "profit" in another word, such as "better to choose jobs," → explain their initially derived profit concretely, such as "possible to choose a job that has better conditions," "more choices of jobs are available" → to have statistical data to quantitatively compare with a different definition of profit.



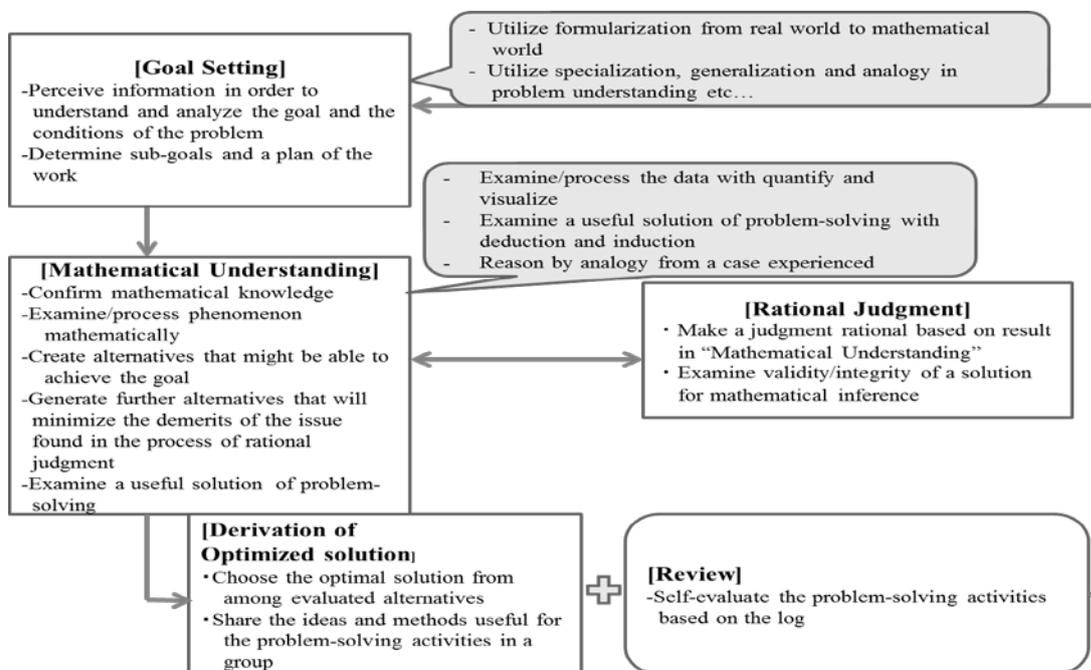
**Figure 3**

*An example to use the method to generate ideas presented to students.*

D) After learning how to engage in problem-based learning using this material, each student derived a problem of his or her own and solved it. In order to help students improve their problem-solving skills, we offered a rubric to self-evaluate their problem-solving approach (see Table 1). We set rubric levels based on how students performed the task which should be performed in each process appropriately.

	Level1	Level2	Level3
<b>Understanding problem</b>	In each process of such as “building up a hypothesis →setting sub-goal,” students could not understand a problem with utilizing views and ways of thinking abstraction and specialization and so on.	Students could understand a procedure of problem-solving activity , however, they could not understand how views and ways of thinking should be utilized.	Students could understand a procedure of problem-solving activity in “Understanding problem” and could solve a problem with views and ways of thinking such as abstraction and specialization in the process.
<b>Thinking mathematically</b>	Students could not utilize domain-specific knowledge and process mathematically with views and ways of thinking such as quantify, visualize and functional views and ways of thinking.	Students could utilize domain-specific knowledge, however, they could not process mathematically with views and ways of thinking such as quantify, visualize and functional views and ways of thinking.	Students could understand a procedure of problem-solving activity in “Thinking mathematically” and could solve a problem with domain-specific knowledge and views and ways of thinking such as quantify, visualize and functional views and ways of thinking.
<b>Thinking reasonably</b>	Students could not consider trade-off relationship about each alternative solution.	Students could understand trade-off relationship about alternative solution, however, they could not utilize various views and ways of thinking.	Students could understand trade-off relationship about alternative solution with various views and ways of thinking and store domain-specific knowledge correctly and could apply it.
<b>Thinking result</b>	Students could choose the optimal solution from among evaluated alternatives, however, they could not examine solution based on problem-solving activity so far.	Students could choose the optimal solution from among evaluated alternatives based on problem-solving activity so far in each process, however, its contents is not logical.	Students could choose the optimal solution from among evaluated alternatives based on problem-solving activity so far in each process, and its contents is not logical.
<b>Review</b>	Students review problem-solving activities based on the log, however, self-evaluation in each process is not consistency of real activity result. In short, they could not acquire meta-cognition knowledge.	Students review problem-solving activities based on the log, and self-evaluation in each process is consistency of real activity result. In short, they could not acquire meta-cognition knowledge.	Students review problem-solving activities based on the log, and self-evaluation in each process is consistency of real activity result. In short, they could not acquire meta-cognition knowledge. Moreover, they could perform mutual assessment as comparing with others evaluation.

**Table 1**  
A rubric for teacher evaluation and students' self-evaluation



**Figure 4**  
Design framework of e-learning materials for problem-based learning in mathematics.

## **FORMATIVE EVALUATION**

In July 2013, we performed practice lessons using the developed e-learning material for 196 tenth-grade students (ages 15–16) who comprised five classes at the Tokyo Tech High School of Science and Technology. The lessons lasted 50 minutes and consisted of the following steps: (1) The teacher explained the purpose of the lesson, (2) the students learned through e-learning material, and (3) the teacher explained their summer vacation homework. Therefore, we needed to design our e-learning material to finish by the third cycle—that is, within 30 minutes—for all students.

We asked the students to complete a pre- and post-questionnaires that consisted of the following items rated on a 5-point Likert scale:

Pre-1) I think that it is difficult to solve this problem mathematically.

Pre-2) I will think that mathematics is useful in daily life if this problem can be solved mathematically.

Post -1) I understand that mathematical functions are useful in explaining familiar phenomena.

Post-2) I think that mathematics is useful and helpful in my actual life.

Post-3) I would like to consider a familiar problem using mathematics by myself.

Post-4) I could understand how to perform problem-based learning over summer vacation.

We also referred to a log of the students' activity in the material, and a tentative report on problem-based learning submitted during their summer vacation.

We analyzed the data and assessed the effects of the new material by comparing it with the data from the previous year. To ascertain whether students' problem-solving improved, we examined the log and the report on problem-based learning. Based on our assessment, we understood the students' thinking and reconsidered our student model and design principle.

In the improved material, we considered that students performed with paying attention to the necessary tasks and utilization of mathematical views and ways of thinking in each process since we show them explicitly according to the analysis of their self-evaluation and comments.

## **DISCUSSING A STUDENT MODEL AND REVISIONS TO OUR FRAMEWORK**

We have developed the material for problem solving by converting the design framework developed by Hirabayashi and Matsuda (2011) into mathematical education. However, the current rubric is insufficient to examine the effects of the material, evaluate the validity of the design principle, and give appropriate feedback to a student. It is, therefore, necessary to establish a structure that can evaluate a student's acquisition of problem-solving skills. To do so, we considered that a student model is necessary

as in a design of intelligent CAI (Computer Assisted Instruction). Matsuda (2013), for example, has been developing a model for virtual mathematical lessons/games, which was also based on principles derived by Hirabayashi and Matsuda (2011). Unlike the present research, however, it focused on assessing necessary knowledge; our study, meanwhile, assessed the design of instruction materials.

### ***A Matsuda-based model for students***

Bruer (1993) claimed that domain-specific knowledge, metacognitive skills, and general strategies are all elements of human intelligence and expert performance. On the other hand, Matsuda's (2013) student model for mathematics education consists of domain-specific knowledge, mathematical views and ways of thinking (instead of metacognitive skills), and knowledge of problem-solving scripts (instead of general strategies).

Bruer (1993) illustrated a variety of different general strategies ranging from study skills to means-end analyses. He noted, however, that they are not easily transferrable without informed instruction. On the other hand, scripts are sets of procedural knowledge that represent appropriate behaviors for situations or places (e.g., restaurants). This type of knowledge is learned experientially, and depends upon specific situations. Matsuda believed that Hirabayashi and Matsuda's problem-solving framework should be taught as the ideal problem-solving script. Nevertheless, Matsuda also noted that no problem-solving scripts are explicitly presented to students as part of mathematics education, leading students to experientially learn their own scripts (e.g., trial-and-error problem solving).

Although the names of the five processes are slightly different between our framework and Matsuda's, the processes' purposes correspond to one other (see Figure 4). Matsuda's model, however, assumes that students learn their own problem-solving scripts empirically, and purpose of his model is to simulate different reactions of students according to appropriate/inappropriate instructions. On the other hand, our framework examined the ideal problem-solving scripts that should be used alongside e-learning materials. Therefore, the tasks, views, and ways of thinking required for each process should be reconsidered. It becomes necessary, in turn, to link information technology education with mathematics education. Hirabayashi and Matsuda's framework closely corresponds to the design process that International Technology Education Association [ITEA] (2007) suggested for technology education, and it is understood as a general method of problem solving. Conversely, it is assumed that the mathematical solution is necessary in a series of problem-solving process. Therefore, the flow of mathematical problem-solving would be to explicitly set the goal of quantitative thought in the goal setting process, to think and process mathematically in the mathematical understanding component, to examine the validity of the approach and its resultant solution closely in the rational judgment component, and to judge which solution should be chosen in a real context.

According to Sannomiya (1996), meta-cognition consists of meta-cognitive knowledge and activities, with the latter consisting of monitoring and control. We consider that monitoring corresponds

to assumptions about thinking, and control corresponds to a manner of thinking. Unlike meta-cognition, mathematical views and approaches are the aim of mathematics education according to Japanese teaching guideline. However, in our research, we changed the information technology approach present in Hirabayashi and Matsuda's framework to a mathematical approach. Nevertheless, students should be required to collect data and consider whether they use ICT or not, in order to apply functional problem solving approaches. This means that they would be required to use informatic and systematic views and ways of thinking, as well as mathematical ones, in problem-based learning. Therefore, we need to add mathematical approaches to each of the processes present in Hirabayashi & Matsuda's problem-solving script. In addition, Matsuda (2013) notes that mathematical views and ways of thinking are related to the ability of independently learn domain-specific knowledge, and the ability to discover one's own errors. Therefore, in the mathematical understanding and rational judgment processes, it is necessary to place that utilization of mathematical views and ways of thinking related with acquiring mathematical knowledge and inducing and examining a solution.

Domain-specific knowledge is modeled on the semantic network (Collins & Quillian, 1969). Since long-term memory is not lost but temporarily unavailable, Matsuda's model focused on explaining how knowledge may be activated and utilized. Therefore, his model emphasized chunking of knowledge, like the frames (Barr & Feigenbaum, 1981) used in artificial intelligence. Our framework needs to instruct students and evaluate whether they can learn new information through chunking, as well as whether they can acquire necessary knowledge by themselves using a particular approach. In addition, we considered that the direction and the strength of connections among different knowledge types, and between knowledge and a particular situation, is important in explaining differential ability to remember problem-solving information. Our framework also needs to contain processes to evaluate and instruct with a focus on the direction and strength of connections between various aspects of knowledge because they are concerned with knowledge activation mechanism (Matsuda 2013).

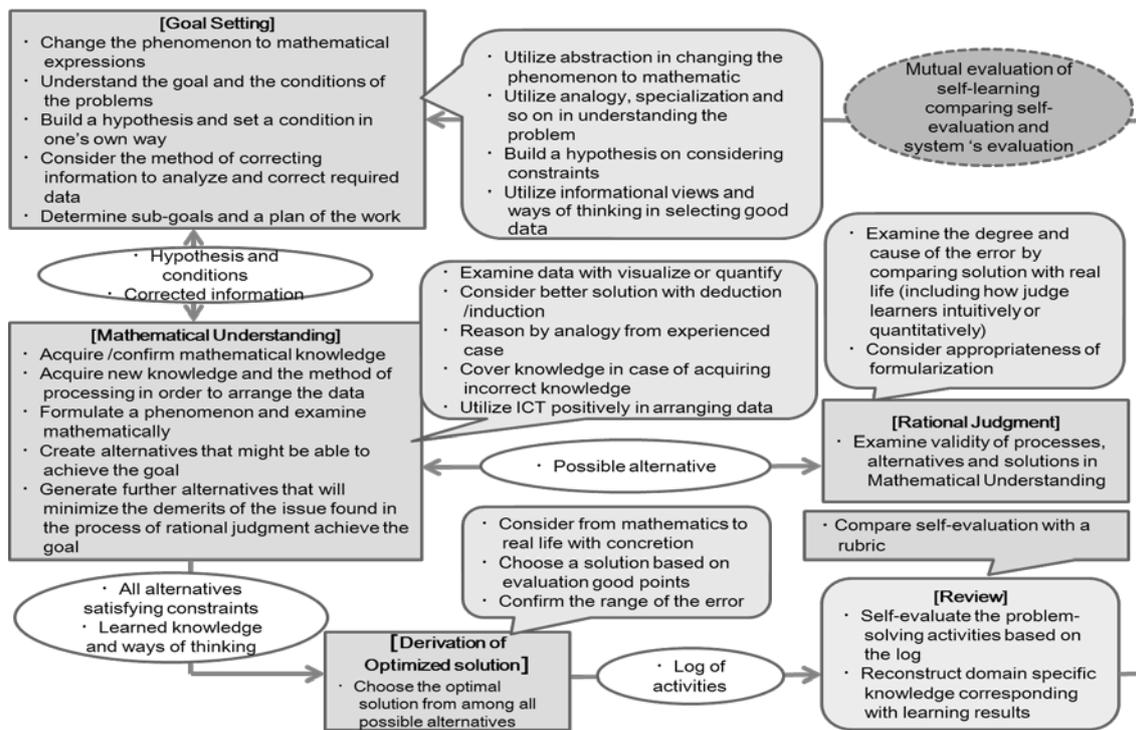
### ***Tasks, procedures, and use of views and ways of thinking in each process***

Based on the student model, we revised the framework, as shown in Figure 4. In this revision, we demonstrate how mathematical views and ways of thinking need to be employed in each process. We also revised the task pertaining to each process.

In the Goal Setting process, students must engage in analogical thinking by recalling past solved problems; not by focusing on superficial similarities, such as topics, but structural similarities, such as limiting conditions, goals, and methods of problem solving using mathematical approaches. We therefore included the exercises in the understanding of limiting conditions, building an individually suitable hypothesis and specializing to postulate conditions. In addition, when correcting data, students must incorporate information technology approaches such as thinking of further useful information and examining the use of ICT to correct and process it.

In the Mathematical Understanding process, students must formulate the problem mathematically through functional and series approaches, quantifying and visualizing. If students hold incorrect domain-specific knowledge, it is necessary to acquire correct knowledge. In the Rational Judgment process, students conceive of various alternative solutions and examine more appropriate options, while considering validity of alternative solutions. Additionally, examining error size is important to this latter component.

In the Derivation of an Optimized Solution process, students select a solution that appears to be the best out of all available choices, while considering constraints. The Review process is the process of self-evaluating students' problem-solving capacities based on the log of the problem-solving process so far. After completing several cycles, students compare past the results of self-evaluations and the results of the systemic evaluation, deriving a general evaluation from the two. These connections between tasks in the processes and the methods of instructions should be considered in devising the framework.



**Figure 5**

*Revised design framework of e-learning materials for problem-based learning in mathematics.*

## FUTURE PERSPECTIVES

We must review the student model and the design of the e-learning material for reference of student'

various reactions. In addition, it is necessary to plan generalization of a valuation basis made and that students can utilize a valuation basis in the activity of problem-solving with “problem-based learning” and mathematical views and ways of thinking. Taking this into account, we propose to generalize of a lesson plan, a design principle of the class and a valuation basis.

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2014 Hawaii International Conference on Education

Multiple Levels of Assistance: Supporting Teachers in Training Who Work with Pupils with Mild to Moderate Disabilities (MMD), Moderate Severe Disabilities (MSD), and Early Childhood Special Education

Poster Presentation

Topic Area – Special Education

Abstract: The presenters will share successful strategies to support teachers in special education settings who are concurrently earning the required credential. This State University alternative certification (Intern) program has prepared hundreds of teachers in the area of special education over the past several years with excellent completion and retention rates. The critical program factors contributing to multiple levels of support will be delineated. Also shared with some research, which describes the specific support activities that candidates ranked as most valuable to their success.

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Critical Thinking Saves Lives!:  
Habits of Mind as Integral Academic Intellectual Imprinting

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## Abstract

This workshop focuses on the educational psychology of the first-year students required to take developmental writing courses as part of their provisional admission to a 4-year university. Offering a critical analysis of Lorenz's (1965) imprinting theory as it relates to early learning habits, we intend to demonstrate that cognitive neuroplasticity can redirect the earlier messages that students receive about their academic abilities. Explicit instruction and discussion of eight habits of mind as identified in the *Framework for Success in Post Secondary Writing* (2011) engages students in the practice of learning in a university environment. However, these habits of mind are neither prioritized by curricular standards, nor measured by standardized assessment. Specifically, we focus on Costa and Kallick's *Habits of Mind* (2000) in conjunction with Freires' (1985) concepts of *the critical act of study* and the *problem-posing model of education*, to support students in their performance under challenging conditions that demand "strategic reasoning, insightfulness, perseverance, creativity, and craftsmanship" (Costa and Kallick, 2000, p.1). Research demonstrates that these habits must be identified, and changed or created by learners in order to encourage development of skills needed for academic persistence at the university level.

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## **Workshop Description**

In this workshop, attendees will be invited to dialogue about integrating the habits of mind into their current classroom pedagogy. Attendees are invited to consider and challenge beliefs about intellectual imprinting in order to re-imagine pedagogical constructs that encourage teaching and learning and promote equity in the classroom. Workshop facilitators encourage a critical dialogue about intersections of cross-disciplinary reading, writing, and oral communication and invite supportive teaching and learning strategies and contributions.

# AN ANALYSIS OF PRESCHOOL PROGRAMS OF SELECTED PUBLIC SCHOOLS IN TARLAC CITY, PHILIPPINES

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**Abstract.** This study analyzed the preschool programs of selected public schools in Tarlac City along curriculum content, activities and assessment of child progress; teachers' educational qualifications, teaching strategies, relationship with children, parents and community; physical environment which includes classrooms, playground, equipment and facilities; health services; and leadership and management. The study also compared the preschool programs against the DepEd and NAEYC Preschool Program Standards. Findings revealed that the preschool programs follow the Kindergarten Education General Curriculum (KEGC) whose aim is to develop the different domains of the pupils. The curriculum follows the Developmentally Appropriate Practice and the different activities are play based. The preschool teachers have taken the required 12 units in Early Childhood/Preschool Education and have attended seminars and trainings in Early Childhood. The Preschool classrooms have not met the standard size of rooms and lacked Learning Centers and a playground for preschool pupils. In the Health component, the preschool programs promote pupils' health, proper nutrition and cleanliness though the health records lack information about immunizations, past illnesses etc. and persons to contact in case of emergency. The School Administrators are qualified and show personal commitment in their work. The ten preschool programs were also compared with the preschool program standards of the DepEd and NAEYC. Results showed that the ten preschool programs met DepEd and NAEYC's program standards for Curriculum, Teachers, Physical Environment, Health and Leadership and Management except for some benchmark statements that were not met.

**Keywords:** preschool programs, public elementary schools, DepEd and NAEYC preschool program standards

## I. INTRODUCTION

"As the twig is bent, so grows the tree" is an old Chinese saying which applies to all children and their early childhood experiences.

An abundance of literature and studies points to the fact that the early childhood years are indeed very important years. Cognizant of the vital role that the early childhood years play in the life and future of an individual, a call for the offering of the best early childhood learning experiences was made.

In the Philippines, the establishment of preschool programs both in private and public schools throughout the country was a response to the call of providing the best learning experiences to the Filipino children especially during their early years. The rationale behind their establishment includes: (1) to support the development of children in their early years; (2) to increase the intellectual and language competence of children so they can express themselves; and (3) to act as socializing agents which prepares children when they enter Grade 1, the elementary school (Enclosure No. 1, DECS Order No. 107, s. 1989). These vital reasons were established, to bridge between the child's life at home and in a larger community.

On January 20, 2012, Republic Act No. 10157 otherwise known as the Kindergarten Education Act was signed into law by President Benigno Aquino III. This Act institutionalizes the Kindergarten Education into the Basic Education System. Kindergarten education becomes mandatory and compulsory before entrance to Grade 1. In the Kindergarten Education Act, the kindergarten education program will be comprised of one year of preschool education for children aged five and above. The program will focus on the thematic and integrative curriculum to ensure the development of functional skills among children to prepare them for Grade 1.

In the city of Tarlac, Preschool Programs have been operational for the past ten years or more. At present, there are 155 organized preschool programs.

The researcher deemed it imperative therefore, to conduct an investigation and analysis of the preschool programs of selected public schools in Tarlac City. This study looked into how these preschool programs are implemented in terms of the essential components of Early Childhood Education. Likewise, benchmarking with Preschool Program Standards provided by the DepEd and the National Association for the Education of Young Children (NAEYC) was made to assess the present stature of the preschool programs.

The researcher believed that an analysis of the preschool programs of selected public schools in Tarlac City may help policy makers, administrators, principals, preschool teachers and parents discover the strengths and weaknesses of the said programs. Measures to address the weaknesses and

inadequacies that will further improve the preschool programs in public schools are recommended. In so doing, high quality preschool programs will be attained.

## II. STATEMENT OF THE PROBLEM

This study was conducted to analyze the preschool programs of selected public schools in Tarlac City. It aims to answer the following questions.

1. How are the following components of the preschool programs of selected public schools in Tarlac City implemented?
  - 1.1. Curriculum
    - 1.1.1. Content
    - 1.1.2. Activities
    - 1.1.3. Assessment of child progress
  - 1.2. Teachers
    - 1.2.1. Educational qualifications
    - 1.2.2. Teaching strategies
    - 1.2.3. Relationship with children, parents, and community
  - 1.3. Physical environment
    - 1.3.1. Classrooms
    - 1.3.2. Playground
    - 1.3.3. Equipment
    - 1.3.4. Facilities
  - 1.4. Health
  - 1.5. Leadership and management
2. How are the components of the preschool programs described when compared against benchmarks for DepEd and NAEYC Preschool Program Standards?
3. What are the implications of the findings to preschool education?

## III. METHODOLOGY

This study is a combination of qualitative and quantitative research. It focuses on the analysis of preschool programs of selected public schools in Tarlac City. In the qualitative aspect, this study looked into how these preschool programs are implemented in terms of the essential components by obtaining information, insights and opinions of the subjects namely: the preschool coordinator, school principals, preschool teachers and parents through focused interviews. Ocular visits of sites as well as analysis of records, lesson plans, assessment tools, work texts, memoranda, reports, etc. were also made. In the quantitative aspect of this study, the data obtained were tabulated according to frequency and percentage.

The status of the preschool programs of these selected public schools in Tarlac City was also assessed. The components of the preschool programs were benchmarked against the DepEd and the NAEYC preschool program standards.

The subjects of this study comprised three (3) groups, namely: the administrators, the preschool teachers, and the parents. All of the subjects came from the ten (10) selected public schools with preschool programs in Tarlac City. The first group of subjects was composed of ten (10) school principals of the selected public schools with preschools

programs. The second group of subjects was the preschool teachers. The group includes thirty three (33) preschool teachers from the ten (10) public schools with preschool programs. Fifteen (15) of these teachers are permanent while eighteen (18) are volunteer teachers. The third group of subjects was made up of forty (40) parents of the preschool pupils.

The five (5) types of instruments that were used for gathering pertinent data were: (1) interview schedule for principals and preschool teachers; (2) interview schedule for the Tarlac City Schools Division Preschool Coordinator; (3) interview schedule for parents, (4) questionnaire for preschool teachers; and (5) physical environment checklist.

In order to achieve the goals of this research the following actions were undertaken.

Letters addressed to the Tarlac City Schools Division Superintendent, to the Preschool Coordinator, to the school principals, and to the preschool teachers of selected public schools with preschool programs were prepared. After permission had been obtained, the researcher administered the questionnaires to the preschool teachers.

To gather pertinent information interviews were also conducted with the respondents of the study.

Also, an ocular inspection of the preschool programs' physical environment was made to look into the status of the preschool classrooms.

An analysis of school records like teachers' lesson plans, assessment tools like teacher made tests, and health records was also done.

Likewise, documents such as DepEd memorandums, orders, letters, announcements, minutes of meetings, progress reports, as well as archival records which include service records, performance ratings of the principals and preschool teachers, organizational charts, and other relevant papers were also examined. Data triangulation was achieved in this study.

Answers to the closed questions found in the Questionnaire for Teachers were tabulated into frequency and percentage.

The yes or no responses in the Physical Environment Checklist were also tabulated into frequency and percentage.

## IV. FINDINGS

### 1. Implementation of the Preschool Programs

#### 1.1. Curriculum

The preschool programs of the ten public schools in Tarlac City are guided by a philosophy, goals and objectives. The preschool curriculum aims to develop the different competencies of the preschool pupils.

The preschool programs of the ten public schools included in the study use the Kindergarten Education General Curriculum (KEGC). This is based on the Kindergarten Curriculum Framework that draws from the principles and goals of the K to 12 Philippine Basic Education Curriculum Framework which is also aligned with the National Early Learning Framework (NELF). The Kindergarten Education General Curriculum (KEGC) follows the principle of the Developmentally Appropriate Practice (DAP), one that is age appropriate, individually

appropriate and socio-culturally appropriate. It considers the developmental benchmarks of Filipino five year olds. The KEGC develops the six developmental domains of the preschool pupils- Physical Health, Socio-Emotional, Character and Values, Cognitive/Intellectual, Language and Creative/Aesthetic. Different play-based activities are used to develop the six domains. The “Blocks of Time” prescribed in the kindergarten curriculum ( Meeting Time 1; Work Period 1; Meeting Time 2; Supervised Recess; Story; Work Period 2; Indoor/Outdoor Activity and Meeting Time 3) is followed by the thirty three preschool teachers. A consistent daily schedule is followed by the thirty three preschool teachers in the teaching of concepts and skills in the five learning areas namely: Math, Language, Science, Physical Education, Health, Music and Arts and Values Education. Curricular themes are used for integrating the five learning areas to develop the six domains. The Readiness Skills Workbook is used by the thirty three preschool teachers. The mother tongue of the preschool pupils, on the other hand, is used as the medium of instruction in the ten public preschool programs.

In developing the pupils’ gross motor skills, activities such as playing, dancing or performing rhythmic activities, walking, running and exercising were used by the thirty three (33) preschool teachers. In developing the pupils’ fine motor skills, activities such as: writing, drawing, folding, tracing / copying letters; coloring and printing one’s name were used.

For the development of the pupils’ personal skills, activities such as singing, reciting poems on how to keep oneself clean; identifying things that one uses to keep himself groomed; demonstrating the proper way of brushing the teeth; teaching right table manners, following simple directions in putting on one’s clothes and tying one’s shoes were employed in all the preschool programs in this study. For the development of the pupils’ social skills, activities such as playing with toys; listening to stories on how to relate with others; assigning simple responsibilities to pupils; role playing to teach pupils in taking turns; story telling on the importance of following rules and participating during class discussions were also used.

For the development of the affective aspects of the preschool pupils, activities such as recognizing different types of facial expressions through games; showing different types of facial expressions/ emotions through action songs; showing concern for others through group play and telling something about themselves and their families were used. The activities for the inculcation of values to the preschool pupils used by all preschool teachers are: saying simple prayers before and after classes; story telling about God; answering the teacher and others politely; distinguishing right from wrong in a short story; following rules and regulations; role playing using courteous expressions; singing children’s songs about nature; reciting poems about love for the country and giving lectures on the importance of rules.

To develop the communication skills in English of the preschool pupils activities such as recognizing/ pronouncing vowel and consonant sounds; producing blended (short and

long) vowel and consonant sounds; and reading simple words with cue patterns and words that rhyme were used. The activities employed to develop the communication skills in Filipino of the preschool pupils were: pagkilala ng iba’t – ibang uri ng tunog / ugong at kung ano ang pinanggagalingan nito; pakilala ng tunog ng bawat titik; pagkilala/ pagbasa nang wasto sa tunog ng bawa’t titik ng alpabeto; at pagbasa ng mga huling pantig at mga salitang binubuo ng mga kambal katinig.

The activities used to develop the numeracy skills of the preschool pupils were: identifying and labeling objects according to color, shape, size, length, etc.; counting numbers; comparing numbers; doing addition and subtraction; recognizing fractions; telling time and days of the week; and counting money.

For the development of sensory – perceptual skills the following activities were employed by twenty one or 100% of preschool teachers: identifying the different parts of the body; distinguishing living from non-living things; describing the different types of food and manipulating matter to see what happens.

Assessment of child progress is an integral part of the curriculum of the ten public preschool programs included in the study, thus it is conducted three times, during the months of July, October and March. The Early Childhood Development (ECD) Checklist guides the thirty three preschool teachers in assessing their pupils’ progress in the different domains. The School Readiness Assessment (SReA), a tool to determine the level of progress of preschool pupils across developmental domains that are critical in tackling Grade 1 learning competencies are given at the end of the school year. Results of the ECD Checklist are shown to the parents.

## **1.2. Teachers**

Only one (1) among the thirty three preschool teachers included in the study is a graduate of Bachelor of Science in Preschool Education. In order to align themselves in the field of early childhood education, twenty six (26) preschool teachers are currently enrolled in a Master’s degree program major in Preschool Education. Eighteen (18) preschool teachers have passed the Licensure Examination for Teachers (LET), four of which are eligible by virtue of the Magna Carta for Teachers. Out of the eighteen, fifteen of the teachers are permanent.

Regarding preschool teaching experiences, four (4) teachers have been teaching preschool for more than ten years; seven (7) have 7-8 years of preschool teaching experience; ten (10) have 5-6 years; five (5) have 3-4 years; three (3) have 1-2 years and four (4) preschool teachers who have been with the program for only a few months.

With regard to seminars and trainings on preschool education, all preschool teachers have attended seminars/ trainings conducted by the Division Preschool Coordinator on Preschool Education. They enumerated past seminars which they have attended and these include the following: National Training of PTCS, LGUS, and Preschool Teachers on the Methodologies in Teaching Preschool; the Division Summer Training in ECE and School Readiness Assessment; Seminar-workshop in Training Beginning

Readers, "Teaching Beginning Reading Through Sound" and the Division Training of Preschool Teachers and many more.

All the thirty three preschool teachers employed varied teaching strategies such as playing; role playing; demonstrating / teaching; story telling; identifying/recognizing (different facial expressions); asking questions; reading; giving lectures; recognizing and pronouncing sounds; describing; noting details; comparing and differentiating objects; doing simple addition and subtraction; telling time and counting money.

No report of cases or complaints has been filed against any preschool teacher for harming her pupils – physically, emotionally and mentally.

The parents through the Parents – Teachers Community Association (PTCA) extend help to the preschool teachers by paying the basic utilities (electricity and water), repair and improvement of classrooms, construction of facilities like toilets and wash basins as well as in the purchase of equipment and other instructional materials. However, a relationship or partnership between the thirty three preschool teachers and the community has not been established.

### **1.3. Physical Environment**

The sizes of the preschool classrooms in the ten public preschool programs are 35 square meters, 40 square meters, 45 and 48 square meters respectively. All preschool classrooms have no learning or activity centers due to the small sizes of the classrooms. The preschool classrooms are properly ventilated and adequately lighted; attractive, safe, clean, orderly, have sufficient and appropriate tables and chairs. The main reason for the inadequacy in the conditions of the preschool classrooms is due to the lack of funds.

There is a dearth of instructional materials in all the preschool classrooms. Age-appropriate and varied instructional materials are lacking or of insufficient quantity due to the lack of funds. Regarding instructional equipment these are also present such as TV sets, radio cassettes, karaokes, and DVD/VCD players however all the preschool classrooms do not have musical instruments.

With regard to facilities, all preschool classrooms have no lockers for the personal belongings of pupils; some have storage cabinets (open shelves) for the teaching aids, materials and other reference books, all have blackboards but only some have display boards.

Regarding health facilities, majority of the preschool classrooms have provided toilets for their pupils. However, the toilet bowls are not the flush types and only some have wash basins which are not appropriate to the height of the pupils. Moreover, all ten public preschool programs do not have a playground for the use of preschool pupils.

### **1.4. Health**

Different health services are provided for preschool pupils in all the ten public preschool programs. All ten public preschool programs have school clinics but there are no resident nurses or physicians to manage the clinics. Only 4 preschool programs out of the ten have first aid kits. Only

two preschool teachers from two preschool programs have undergone first aid training. Furthermore, no drinking fountains are found in the ten public preschools.

### **1.5. Leadership and Management**

The preschool coordinator and ten school principals are Education graduates and have a doctoral or master's degree in Education. They obtained a very satisfactory performance rating in the management and supervision of their school including the preschool program.

All the school principals

## **2. Compliance of the Preschool Programs to the DepEd and NAEYC Preschool Standards**

In *Table 1*, all the benchmark statements for the DepEd preschool program standards for curriculum and all the benchmark statements for the NAEYC preschool program standards for curriculum content were met by the ten public preschool programs included in this study.

*Table 2* shows that eight out of eleven benchmark statements for the DepEd preschool program standards and NAEYC preschool program standards for teachers were met by the 33 preschool teachers while three benchmark statements were not met. Those that were not met are: teachers possess education degrees with specialization in preschool/early childhood education; teachers develop partnerships and professional relationships with agencies, consultants and organizations in the community to meet the needs of children; teachers communicate with other agencies and programs to achieve mutually desired outcomes for children.

In *Table 3*, it is shown that eight out of fourteen benchmark statements for the DepEd and NAEYC standards for physical environment were met by the 33 preschool classrooms. The benchmark statements that were not met pertain to the ideal size of the classrooms; the availability of individual storage and space for each child's belongings; having equipment, materials and furnishings that are accessible for children with disabilities; the presence of learning centers/areas inside the classrooms; the availability of a playground which has a minimum size of 360 square meters or a nearby park/open space to replace the playground if this is not available, the presence of apparatus such as jungle gym, slides, balance beams, etc. in the playground and the security and safety of the playground.

In *Table 4*, it is shown that two out of six benchmark statements for the DepEd and NAEYC preschool program standards for health were met by the ten preschool programs included in this study. The statements that were not met pertain to the health records containing the information about the child's health including immunization, the health records containing emergency information of each child; the programs' implementing a written agreement with a health consultant, and the programs having at least one teacher/staff who has first aid training.

In *Table 5*, it is presented that three out of four benchmark statements for the DepEd and NAEYC preschool program standards for leadership and management were met

by the preschool coordinator and school principals. The benchmark that they were not able to meet states that administrators/principals should have at least 12 units of preschool education course.

## V. CONCLUSIONS AND IMPLICATIONS

The results of the study revealed that the preschool programs in Tarlac City have complied with some of the standards prescribed by the DepED and NAEYC. This means that slowly, public schools are trying to provide the education services that pupils need to cope with elementary education once they complete their preschool. However, there were aspects in the standards which the schools failed to comply with which includes pertinent factors in developing excellent pupils such as teacher qualification to teach in preschool and ideal classroom sizes and facilities which would facilitate learning. Most teachers do not possess preschool education and classroom sizes did not meet standard specifications. In addition, the size of the classrooms were small, there was no playground, there were no individual storage/space for the children's belongings and equipment; facilities and furnishings for children with disabilities were not available.

Failure to address these inadequacies will most likely hinder full development of the pupils in public preschools in Tarlac City. Gapuz (2010) characterized a good preschool program. She said that preschools must be in a clean and secure location. This is non-negotiable for preschools. There must be complete and safe facilities. There are basic facilities children need round the clock and facilities that are required to keep the school child-friendly and hazard-free. Further, a preschool must have a toilet room, a sanitary area for eating, a separate area for trash, a clinic or medicine cabinet, a no-slip flooring and cabinets for toys and other materials. Furniture and any equipment must have no sharp edges. Electric outlets must have covers and anything else that pose harm to kids should be kept out of their reach and eyesight.

### THE IMPACT OF THE FINDINGS ON CHILDREN

#### *Curriculum*

On January 20, 2012, the Philippine President signed into law, Republic Act No. 10157, an Act Institutionalizing the Kindergarten Education into the Basic Education System. This Act makes Kindergarten compulsory and mandatory and an integral part of the basic education system of the country.

Corollary to this is the implementation of various reforms and programs for Filipino Preschool pupils. One of these is the use of the Kindergarten Education General Curriculum (KEGC), which is based on the Kindergarten Curriculum Framework. The Kindergarten Framework follows the Developmentally Appropriate Practice, one that is age-appropriate, individually appropriate and socio-culturally appropriate. The Kindergarten Framework also considers the developmental benchmarks of Filipino five year-old children, recommends the use of strategies that address needs and interests of the learners and uses the

mother tongue as medium of instruction. The KEGC aims to develop the six developmental domains of preschool pupils- their physical health; socio-emotional; character and values; cognitive / intellectual; language ; and aesthetic/creative. Different play based activities are also used to develop the six domains. Curricular themes for integrating the five learning areas to develop the six domains to develop the preschooler holistically and functionally is also used.

An enhanced kindergarten curriculum such as the KEGC would surely be beneficial to the young Filipino learners . The teachers will be guided in planning their daily lessons and activities, employing varied teaching strategies that are interesting and enjoyable for the children. The fact that the curriculum aims to develop the pupils holistically in the six domains means that the kindergarten program wants to produce well rounded individuals who are emergent literates and ready for formal school.

The Mother Tongue Based - Multilingual Education (MTB-MLE) method was also adopted pursuant to R. A. 10157. The mother tongue of the learners is used as medium of instruction for teaching and learning in the kindergarten level in all public schools throughout the country. The use of Filipino and English which are the learners' second language become obstacles of learning if the children are unfamiliar with either of the two languages. Pupils cannot learn concepts in English if they are still in the process of language acquisition. On the other hand, the use of the mother tongue as a language of instruction in the early years of schooling will facilitate the pupils' learning of all subjects. It will be beneficial to the young learners who are still beginning to learn the concepts. This is in consonance with what Cooper (2006) said that children become readers of English when they are already familiar with the vocabulary and concepts in their primary language.

Assessment is also an integral part of the KEGC. Information on pupils' learning and progress in the different domains is very important. It is also essential to the curriculum because sound decisions about teaching and learning are made when the young learners' strengths, progress and needs are determined.

#### *Teachers*

Majority of the teachers in the kindergarten level do not possess the necessary qualifications such as having a specialization in Preschool/Early Childhood Education. However, there are efforts on their part to align themselves in the field, by enrolling in the Master's degree program major in Preschool /Early Childhood Education and by attending seminars and trainings in Early Childhood Education. Researches have shown that the quality of young children's experiences in ECE depends so much on the educational qualifications of those who teach and care for them. NAEYC (2001) pointed out that children benefit most when teachers have high levels of formal education and specialized early childhood professional preparation. The presence of warm and positive environment for children results from teachers having specific preparation, knowledge

and skills in child development and early childhood education.

Varied teaching strategies were used by the preschool teachers. Playing games and role playing were the strategies they frequently use. The various kinds of play are effective vehicles for learning. According to De Vries et al. (2000), the spontaneous play of children provides opportunities for exploration, experimentation and manipulation that are essential for the construction of knowledge. At play children learn to draw feelings, interact with other children, resolve conflicts and gain a sense of competence. Role playing, on the other hand, develops representational thought.

A positive relationship exists between the preschool teachers and their pupils. The preschool teachers do not employ physical, psychological and emotional punishment as well as discrimination on their preschool pupils because of their knowledge and awareness of the Code of Ethics for Early Childhood Education. Beihler and Snowman (2004) said that the quality of children's relationships with their preschool teachers predicts how well they will adapt and learn. A positive and warm relationship developed between the teachers and their pupils will help the latter become secure and stable individuals with positive sense of selves.

No relationship/ linkages has been established between the preschool teachers and the community resulting to the lack or absence of invaluable support which these stakeholders can give to the preschool pupils and to the preschool program as a whole.

### ***Physical Environment***

Findings of the study showed that classrooms did not meet the standard size prescribed by the Department of Education in the Philippines. The preschool classrooms were not spacious enough to allow movement of young pupils. According to Beaty (2004), physical environment including classroom size is of great importance in the learning process of young children. With a spacious learning environment, pupils are provided with a high- activity, low stress environment where they can learn happily together.

Findings from the study also showed that there is a scarcity of instructional equipment in the preschool classrooms. The reason for this is due to the lack of funds. Instructional equipment supplements the curriculum. They can be used to support learning across domains. Dodge (2004) pointed out that the effective use of instructional equipment can maximize the learning of pupils. It is commonly accepted that preschoolers are active learners. Therefore, the scarcity of materials will affect their ability to explore, manipulate and become involved in the teaching-learning process.

Learning Centers or Areas such as communication skills center, sensory-perceptual and numeracy skills center, creative and development center are not found in the preschool classrooms. According to the preschool teachers, there are no learning centers in their classrooms because the sizes of the rooms are small. Research studies show that learning centers/areas do a lot of good to the pupils. They bring about good results in the different areas of

development of pupils. Learning centers encourage active learning by children. The learning centers allow preschoolers to make choices, encourage hands-on experiences and provide for individual learning styles.

Playground and the necessary apparatus / equipment was not also found in all preschool programs. According to the school officials, the reason for the absence of a developed playground for preschool pupils is because of the lack of funds for the project. Developing a playground complete with apparatus/equipment requires a huge amount of money.

### ***Health***

The preschool programs promote the pupils' good health, proper nutrition and cleanliness, availability of individual health records of children and the keeping of results of physical and dental examinations reflected in the health records. Health and education go hand in hand. Children who are healthy, stimulated, well nurtured during early years tend to do better in school and have better chance of developing the skills required to contribute to their total development.

### ***Leadership and Management***

One aspect which is vital to supervision and management of a preschool program is the educational qualifications of its administrators/ principals. Findings show that all the administrators are educationally qualified, they have at least two years of very satisfactory experience in managing, directing, supervising and monitoring their respective schools including the preschool program. Leadership and management is an important component of the preschool program. The quality of a preschool program depends on how it is supervised and managed.

## **VI. RECOMMENDATIONS**

1. A follow up study should be conducted to find out the effectiveness of the implementation of the Mother Tongue Based Multilingual Education (MTB-MLE) method.
2. Preschool Teachers should continuously upgrade themselves by attending seminars, workshops and trainings specially in the field of Early Childhood Education.
3. Preschool teachers should establish relationship/ partnership with the community such professional, civic and religious organizations and local government officials who could provide the necessary support and assistance for the improvement of the preschool program.
4. Preschool Programs should follow the standard classroom size for preschool rooms.
5. Storage cabinets/ lockers where preschool pupils could keep their personal belongings should be provided.
6. Facilities and furnishings for disabled preschool children should also be provided in preschool classrooms.
7. Learning/Activity Centers should be put up inside preschool classrooms.

8. The preschool programs should have a playground for the exclusive use of the preschool pupils.
9. The individual health records of the preschool pupils should include information about the children's immunization, health history and persons to contact in cases of emergency.
10. Preschool teachers should be required to undergo first-aid trainings.
11. School principals should comply with the DepEd requirement that they should have at least twelve units of preschool education.

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**Table 1. Benchmark Statements on Curriculum**

<b>Benchmark Statements on Curriculum</b>	<b>DepEd Standards</b>		<b>NAEYC Program Standards</b>	
	<b>N</b>	<b>Remarks</b>	<b>N</b>	<b>Remarks</b>
Programs have a written statement of Philosophy, Goals and Objectives	10	Met	10	Met
Programs implementation a curriculum that promotes the development of the social, physical, emotional, personal and cognitive (includes communication skills, sensory-perceptual and numeracy) aspects of children.	10	Met	10	Met
Curriculum provides activities that ensure the holistic development of the preschoolers.	10	Met	10	Met
Curriculum reflects family/ home values, beliefs, experiences and language.	10	Met	10	Met
Curriculum guides the development of a daily schedule that is predictable yet flexible and responsive to individual needs of the children.	10	Met	10	Met
Curriculum offers opportunity for children to learn individually and in groups according to their developmental needs and interests	10	Met	10	Met
Programs conduct assessment as an integral part of the program.	10	Met	10	Met
Programs use a variety of assessment tools – observations, checklists, etc.	10	Met	10	Met
Programs communicate with families on assessment results.	10	Met	10	Met

**Table 2. Benchmark Statements for Teachers**

Benchmark Statements for Teachers	DepEd Standards		NAEYC Program Standards	
	N	Remarks	N	Remarks
Teachers have a college course major in Early Childhood Education	1	Not Met	1	Not Met
Teachers have eighteen (18) professional units in Early Childhood / Preschool Education	26	Met	26	Met
Teachers participate in in-service professional development trainings in Early Childhood on an on-going basis.	33	Met	33	Met
Teachers passed the Licensure Examination for Teachers (LET) or are licensed teachers.	18	Met	18	Met
Teachers possess preschool teaching experience.	29	Met	29	Met
Teachers have a Very Satisfactory Performance Ratings in teaching preschool.	29	Met	29	Met
Teachers show professional commitment in their work.	33	Met	33	Met
Teachers know and use the ethical guidelines in their conduct as members of early childhood profession.	29	Met	29	Met
Teachers create a positive emotional climate (reflected in behaviors such as frequent social conversation, joint laughter and affection)	33	Met	33	Met
Teachers develop partnerships and professional relationships with agencies, consultants and organizations in the community to meet the needs of children.	0	Not Met	0	Not Met
Teachers communicate with other agencies and programs to achieve mutually desired outcomes for children.	0	Not Met	0	Not Met

**Table 3. Benchmark Statements for Physical Environment**

<b>Benchmark Statements for Physical Environment</b>	<b>DepEd Standards</b>		<b>NAEYC Program Standards</b>	
	<b>N</b>	<b>Remarks</b>	<b>N</b>	<b>Remarks</b>
Classrooms meet standard size which is 7m x 9m	12	Not Met	8	Not Met
Classrooms have at least two fluorescent lights and one window for proper lighting.	17	Met	17	Met
Classrooms have at least two electric fans, one ceiling fan and a wide window for good ventilation.	17	Met	17	Met
Classrooms are safe from hazards such as open electric wires, unsafe outlets, stairways, structures, etc.	17	Met	17	Met
Indoor environment of the classrooms are healthful.	17	Met	17	Met
Furniture such as tables, chairs, lockers and cabinets conform to the standards based on an anthropometric measurement of preschool age children, both in standing and sitting positions.	22	Met	22	Met
Classrooms provide individual storage and space for each child's belongings	0	Not Met	0	Not Met
Equipment like chairs has a back and a seating height that allows the child to sit with his/her feet on the floor or ground.	22	Met	22	Met
Equipment, materials and furnishings are accessible for children with disabilities.	0	Not Met	0	Not Met
Classrooms have learning centers/ areas such as communication skills center, motor and creative development center.	0	Not Met	0	Not Met
Playground meets minimum size which is 360 square meters.	0	Not Met	0	Not Met
Nearest park or open space (not more than 200 meters walking distance) replaces playground if it is not available.	0	Not Met	0	Not Met
Playground contains apparatus such as jungle gym, sand box, slides, balance beams, simple obstacles, etc.	0	Not Met	0	Not Met
Playground is safe from hazards such as diggings, pools, stairways, structures, etc.	0	Not Met	0	Not Met

**Table 4. Benchmark Statements for Health**

<b>Benchmark Statements for Health</b>	<b>DepEd Standards</b>		<b>NAEYC Program Standards</b>	
	<b>N</b>	<b>Remarks</b>	<b>N</b>	<b>Remarks</b>
Programs promote children’s health, proper nutrition and cleanliness	10	Met	10	Met
Programs maintain current health records of each child.	10	Met	10	Met
Programs have health records which contain information of results of children’s health examinations including immunization.	0	Not Met	0	Not Met
Programs have health records that contain current emergency information for each child and individuals authorized to access information about each child.	0	Not Met	0	Not Met
Programs implement a written agreement with a health consultant.	0	Not Met	0	Not Met
Programs have at least one teacher/ staff that have completed first aid training.	4	Not Met	4	Not Met

**Table 5. Benchmark Statements for Leadership and Management**

<b>Benchmark Statements for Leadership and Management</b>	<b>DepEd Standards</b>		<b>NAEYC Program Standards</b>	
	<b>N</b>	<b>Remarks</b>	<b>N</b>	<b>Remarks</b>
Administrators/ principals possess college degrees allied to education.	10	Met	10	Met
Administrators/ principals have at least 12 units of preschool education.	1	Not Met	1	Not Met
Administrators have at least two years of very satisfactory work experience in a school set-up.	10	Met	10	Met
Program administrators show professional and personal commitment in their work.	10	Met	10	Met

# ‘Emirati Student’s Motivations for Entering a Teacher Training Institute and their Plans to Teach’

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## ABSTRACT

Current education reform in Abu Dhabi, UAE, and the Abu Dhabi Vision 2030 which seeks to place more Emiratis in key sectors such as education, has driven a need for Emiratis to be trained as teachers. This paper presents the findings of a study into the motivations of Emiratis to enrol in teacher education and their intentions to teach after graduation. Over 200 students across the four-year degree programme at Abu Dhabi Teachers’ College (pseudonym) were surveyed to ascertain their original motivation for enrolment and their plans upon graduation, with a random selection of volunteers interviewed further in a mixed-methods approach. These interviews yielded interesting insight into the paths the subjects had travelled to get to teacher education and their future prospects, including their perspectives on themselves, the teaching profession and their families’ future plans for them.

Similar to research worldwide, the highest rated motivators for entering a teaching training programme had an intrinsic and altruistic attitude. However, extrinsic and pragmatic reasons were also rated highly indicating that Emirati students are multi-motivated. These ratings did not differ significantly for males and females, although a much greater percentage of males reported a lack of commitment to teaching upon graduation. An increase in teaching salaries may entice more Emiratis to the teaching profession; however a significant change in the perception of teaching and a transparent promotions path is likely to be needed to encourage male Emiratis to consider teaching.

## 1. INTRODUCTION

## 1.1 BACKGROUND

In Abu Dhabi, a teachers' college was established in 2007 in answer to significant educational reforms in the Emirate's public school system. It is the only local college offering a Bachelor of Education (B.Ed.) programme that prepares future teachers to teach integrated English, Mathematics and Science through the medium of English for cycle one schools (grades 1-5). Despite large-scale marketing in the past, particularly to school leavers, the College currently has only 242 students enrolled in the B.Ed. programme. Abu Dhabi needs approximately 5000 teachers for its public schools<sup>1</sup>. Last year, ADTC graduated its first cohort of teachers. Of the 147 graduates, only 50% accepted teaching positions in Abu Dhabi's public schools. For a dedicated teaching college expected to play a major part in the Abu Dhabi education reform, this is a mere drop in the bucket.

## 1.2 CONTEXT

This research took place within the B.Ed. programme at Abu Dhabi Teachers' College, ADTC (pseudonym). The College is the only dedicated teacher training college in Abu Dhabi and students must be Emirati to be eligible to enrol.

Through informal discussions with students, the author discovered that there are a wide variety of reasons for enrolment at ADTC, several of which indicate little or no commitment to the teaching profession. With Abu Dhabi requiring so many teachers for its cycle one public schools and with the Abu Dhabi 2030 Vision aiming to have Emiratis in key sectors, including education, it is imperative for the ADTC to produce high quality, dedicated teaching professionals. Therefore, it is important to understand what motivates an Emirati student to undertake a teaching degree. This information could not only inform recruitment and retention at the College, but also potentially inform policy-makers at an emirate or federal level.

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<sup>1</sup> Education graduates of the Higher College of Technology and Zayed University were also employed in public schools for the first time this school year (2012-2013).

The purpose of this research is to better understand Emirati students' motivations for enrolling in a teacher training programme and what their intentions are upon graduation. For those who do not want to teach, or who are yet undecided, what moved them to enrol in the four year degree programme? Although student numbers are important to the continued existence of the college, are we wasting resources training students for a career they will not pursue?

### 1.3 RESEARCH OBJECTIVES

1. To investigate the reasons why Emirati students choose teacher education as a field of study.
2. To consider changes to recruitment policies and procedures and changes to programmes at the college to attract and retain committed teaching professionals.
3. To give a voice to Emirati student teachers as to what discourages them from teaching and ascertain their own solutions for overcoming these discouragements.
4. To identify implications and potentially inform policy makers at the Abu Dhabi Education Council (ADEC) about recruiting and retaining Emirati teachers.

### 1.4 FOCUS QUESTIONS

My research aims to find out what initially motivated the current Emirati students to enrol at ADTC and what percentage of them plan to teach upon completion of their Bachelor of Education.

Therefore, my research questions are:

- What were the motivating factors behind an Abu Dhabi teachers' college's students enrolling in the B.Ed. programme?
- How many students intend on entering the teaching profession upon graduation, and if not, why not?

- Do the answers to the previous questions differ for males and females?

## 2. LITERATURE REVIEW

### 2.1 ALTRUISTIC, INTRINSIC AND EXTRINSIC MOTIVATIONS

The preliminary review of literature indicates that intrinsic, altruistic and extrinsic motivations are key terms in understanding what motivates individuals to pursue teacher education and are therefore outlined here.

Motivation is what moves us to do something. “[M]otivation involves energy and drive to learn, work effectively and achieve potential” (Sinclair, 2008, p. 80).

Oxford Dictionary (2003) defines altruism as a regard for others as a principle of action and idealism as the practice of forming or following after ideals, especially when they are unrealistic. Intrinsic is defined by the same source as a motivation that is inherent, essential; one that belongs naturally; and extrinsic as motivation that is not inherent or intrinsic but extraneous or outwardly.

For the purpose of this study, altruistic, idealistic, intrinsic and extrinsic motivations will be defined in the following ways: altruism is concerned with opportunities to make a positive impact in the lives of young people, and/or for the development of Abu Dhabi as a whole suggesting a mindset of ‘what can I do for the world?’. Idealistic motivations is concerned with improvement of the education system to a perfect model, or ‘I want to make a positive difference’. Intrinsic motivation occurs when student teachers believe they will get personal enjoyment and satisfaction from teaching and from being in a school environment - ‘what makes me feel good’. Extrinsic motivation encourages student teachers to like teaching due to the remuneration and benefits of the profession, or ‘what will I get from teaching’.

### 2.2 TEACHING COMMITMENT

Teaching commitment is defined as a student teacher's degree of psychological attachment to the teaching profession (Rots, Aelterman, Devos and Vlerick, 2010). "Teaching commitment is considered to be a cognitive and emotional reaction to student teachers' learning experiences in teacher education and the resulting (self-perceived) values, competencies, and accomplishments as a teacher" (p. 1622). This implies that the experiences that a student teacher has during his or her time at a teachers' college can positively or negatively impact on the likelihood a student will teach upon graduation. Obviously, this has serious implications for teaching college curriculum designers.

### 2.3 MOTIVATION TO ENTER TEACHER TRAINING

Jarvis and Woodrow (2005) state that making a decision about one's future profession is a complex process influenced by varying motivations. Al-Yaseen (2011) highlights the tough decision high school graduates have to make when deciding on a future career: "Choosing to become a teacher is a courageous decision, as teaching is described as a stressful and demanding profession, and requires responsibility, commitment, and accountability" (2011, pg 667). She acknowledges that teaching is not for everyone.

Research (eg: Dowson and McInerney, 2003; McInerney, Maehr & Dowson, 2004) suggests that key motivations determine attraction to engage in certain activities, retention in those activities and the concentration applied to those activities. In terms of teaching, motivations may determine what attracts a person to teaching, how long they are willing to spend on teacher education and in the teaching profession and the depth to which they engage with their course work and subsequent teaching career.

Much has been written about altruistic and intrinsic motivations as major reasons why students choose to enter teacher training (Ejeh, 2005; Hao & Guzman, 2007; Al-Yaseen, 2011; Weaver-Hightower, 2011; Dickson & Le Roux, 2012, for example). In fact, a review of such research up to the early 1990s suggested that "altruistic, service-oriented and other intrinsic motivation are the source of the primary reasons entering teacher candidates report

for why they chose teaching as a career” (Brookhart & Freeman, 1992, p. 46). Many studies since then have continued to find this true. For example, Krecic and Gmek (2007) who report the main motives of future pedagogy workers are altruistic, including the pursuit of happiness and a wish to work with children, and Williams and Forgasz (2009), whose findings revealed motivations were largely intrinsic. This differs from the author’s experience as a faculty member in a teaching college. Informal conversations with students identified several motivations for enrolling and few of them seemed to have the desire to teach as the basis. These reasons range from ‘I thought this would be an easier course than the engineering one I also was accepted for’ to ‘I need a degree to go further in my current career’.

A study in Turkey found students choose teaching for four reasons; the desire to teach, the interest in the subject they would like to teach, better job opportunities and the perception that their personal characteristics match with the ones teachers are expected to have (Ok & Onkol, 2007) implying intrinsic and extrinsic factors as the main impetus. Morales (2007) found in Florida, USA, that “...the fulfillment of a need for service and the need for power to influence others were the major reasons for the respondents to have made teaching their career choice” (p. 342-343). A study in Slovenija found that self-realization and altruistic reasons ranked highest for elementary teacher trainees (Krecic & Grmek, 2007). Similarly, the top reason Filipino preservice teachers were found to pursue teacher education was for idealistic reasons that generally speak of teaching in its very nature (Hao & de Guzman, 2007).

Kyriacou and Coulthard (2000) found that career-change teacher trainees chose teaching because they believed the factors they required from a career could be met by the profession, most importantly having responsibility and making a contribution to society, indicating both intrinsic and altruistic motivations. Williams and Forgasz (2009) also studied career-changers and found that while intrinsic and altruistic reasons for entering teaching were prominent, there were also extrinsic motivations such as holidays. Jarvis and Woodrow (2005) also surveyed Post Graduate Certificate in Education (PGCE) trainees in Manchester about their reasons for choosing teacher training. 93% of the answers given

were able to be categorised as vocational commitment or career-related reasons. Interestingly, this research found that only 38% of all participants chose reasons that were categorised by the researchers as vocational, which had an altruistic and intrinsic slant. The results also showed that more than three times as many females than males replied that they had always wanted to teach. A reason Jarvis and Woodrow offer for this is that it is more likely that women would pursue a career that would fit in with family life. I would predict that this would also be a contributing factor for our family-focussed students, both female and male.

Closer to home, Al-Yaseen (2011) studied the factors influencing students to enrol at the College of Education in Kuwait and concluded that altruistic and intrinsic factors were the main influencers. However, interestingly, only 55% of the students in the Kuwaiti study claimed that the teaching profession was their first choice (Al-Yaseen, 2011).

Recent research in Abu Dhabi into the reasons behind male Emiratis choosing teacher training has uncovered that most male student teachers are there purely due to availability on the course (Dickson & Le Roux, 2012). Clearly, this indicates neither intrinsic nor altruistic motivations and does not signify any obligation to the teaching profession. In fact, half of the male students surveyed expressed that they were not committed to teaching upon graduation. This coincides with the author's experience at the teachers college.

## 2.4 MOTIVATION TO TEACH UPON GRADUATION

Ejeh's (2005) research into Nigerian students' motivations for entering teachers' college<sup>2</sup> found that that almost 80% of respondents cited opportunities to continue their education at university as the main motivational factor (2005). This indicates that a significant percentage of students are simply using teachers' college as a way into a university degree programme and have no intention of entering the teaching profession, which is cause for concern. This also corresponds with my experience, with students (males, in particular) requiring any degree to progress further in a current career or to start at a higher rank in a

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<sup>2</sup> In Nigeria, a graduate from teachers' college is awarded a Certificate in Education, not a degree.

new career, for example, in the police department. Jarvis and Woodrow (2005) also found that a small minority in the PGCE programme did not intend to teach at all and were merely using the course as a stepping stone to another career. In a 2007 study on Filipino student teachers, Hao and Guzman found that the top motivator was idealistic, such as contributing to the development of knowledge, but were disturbed by the students' desire to work abroad and go to other countries which came in as a close runner-up, indicating that Filipino students' attribute a teaching qualification with the chance to "explore the globe for greener pastures" (p. 125).

Although not the case for the Emirati male students or the Kuwaiti trainee teachers, Rots, et al (2010), assume that most student teachers start their training with the motivation to become teachers, but then experience a reality shock about the complexity of a classroom. For some, this is enough to end their teaching aspirations.

Also disturbing was that approximately 23.5% of the participants in Williams and Forgasz's (2009) study, who had returned to higher education specifically to gain a teaching qualification, claimed that they were keeping their work options open.

Students in both Dickson and Le Roux's (2012) Abu Dhabi study and Ejie's (2005) Nigerian study claimed that the perceived low status of teachers was a major disincentive to enter the teaching profession, while Kyriacou and Coulthard (2000) cited 'dealing with disruptive pupils', 'the amount of bureaucratic tasks to perform' and 'undergoing inspections' as major deterrents to teaching.

Both Dickson and Le Roux's (2012) and Weaver-Hightower's (2011) studies, that focussed on male student teachers, found that students were subjected to much discouragement from teaching from friends, families and outside parties. The participants in Weaver-Hightower's study cited 'education is a feminine career' as one of the things repeatedly heard by the male students. In Dickson and Le Roux's study, the males did not mention this explicitly, but did allude to the pressures felt by Emirati males to provide for their families, a pressure not felt by Emirati females, and that they were often reminded they could get easier jobs

that paid more. Male students at ADTC have also alluded to teaching as not being seen as an important or respected job.

In contrast, Sinclair (2008) found the two-thirds of the student teachers surveyed at the beginning and end of their first year in teacher education reported a positive change in their commitment to teaching. They claimed to be “more committed, more focussed, and working harder” (p. 91). These students had completed their first practicum and commonly had a greater awareness of the job of being a teacher. They reported that the increased commitment was due to the experience of working with and having influence over children in real schools, the working conditions they experienced, through self-evaluation of their suitability as teacher and from feeling like they were making a difference in the world, thus indicating that intrinsic, extrinsic and altruistic motivations all have a part to play.

Sinclair (2008) reported that student teachers have multiple motivations rather than a single motivation to teach. These motivations are centred on an individual’s future students, capabilities, likes and dislikes and how their future work and working conditions fit with their personal lives. This means research may not be able to narrow down a group’s or even an individual’s main motivation to teach, but it may help determine whether there is a bias towards one or the other.

Based on the above definitions, it appears that altruism is the noblest of the motivations to teach. However, interestingly, Miech & Elder (1996) found that altruistically motivated teachers were more likely to leave the profession due to frustration from a lack of guidance on goals, means and evaluation of their work. In an earlier study, Martinez-Pons (1990) found that intrinsically motivated teachers were slightly more committed to teaching than extrinsically motivated teachers.

Not all teacher trainee graduates enter the teaching profession upon graduation, either because they never had the intention to or their plan changed over the course of the programme. It is, therefore, imperative to know what initially motivates students to enrol in an education degree and what their goals are after graduation. It is also important to ascertain what factors may encourage and/or maintain a motivation to teach and what are

the dissuasions to teaching, perceived or real. This study will compare the motivations of Abu Dhabi's student teachers with the relevant literature.

## 2.5 THEORETICAL FRAMEWORK

Research studies (eg, Jarvis & Woodrow, 2005; Sinclair, 2008; Watt & Richardson, 2008; Chong & Low, 2009; Richardson & Watt, 2010, among others) suggested making a decision about one's future profession as a complex process due to influences by various motivations. The review of literature indicates that intrinsic, altruistic and extrinsic motivations are key terms in understanding what motivates individuals to pursue teacher education. This study has, therefore, attended to what motivates Emiratis to enter teacher education and the teaching profession. These motivations have been uncovered by asking students to rate their reasons for enrolling in a teacher training programme. The given reasons had either an intrinsic, extrinsic or altruistic perspective. In light of the prior observations of the author on ADTC students and UAE culture, some prominent pragmatic reasons were taken into consideration (Figure 1) for empirical study.

Figure 1: List of motivations under study: Scales & items

Scale	Items	Item No. on questionnaire
<i>Altruistic</i>	I enjoy working with children	1
	I want to be a part of the educational reform in Abu Dhabi	6
<i>Intrinsic</i>	I want to share my knowledge with my students	7
	I have always wanted to be a teacher	13
	Teaching fits in with family life/being a parent	14
<i>Extrinsic</i>	The salary for teachers is high/attractive	4
	I want to enjoy 3 months of holiday each year	5
	Teaching is likely to assure me a job after graduation	10
	The teacher has a high status in society	11
<i>Pragmatic</i>	My family chose the college for me	2
	I want to obtain a university degree only	3
	The possibility of working close to my home	8
	I want to work in a segregated workplace	9
	ADTC is an easy college to get into/study at	12

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Source: Extensive literature review and author's experiences in the UAE.

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The questionnaire will also reveal the intentions of the participants after graduation and subsequent interviews will reveal more about the reasons students might not want to teach after graduation.

### 3. RESEARCH DESIGN AND METHOD

#### 3.1 METHODOLOGY

Using an explanatory sequential mixed method design, the research was conducted in two phases; quantitative research (questionnaire) followed by qualitative (interview).

A questionnaire, consisting of a 5-point scale to indicate the importance of a supplied reason for enrolling in the college, space to write reasons other than those supplied if desired and a three point scale to indicate intentions upon graduation (I will definitely teach, I will definitely not teach, I am not sure yet). Participants who responded that they will definitely not teach or are still undecided had space to write an explanation as to why that is. The questionnaire was anonymous. However, students were given the option of recording their student ID number if they agreed to being contacted subsequently for an interview concerning their post-graduation intentions. Interview candidates who claimed they will definitely not teach after graduation or are unsure, were divided into male and females and four of each were chosen at random. Interviews were open-ended and questions emerged from the interviewees' responses.

#### 3.2 DATA SOURCE

A non-probability method was employed here. Each B.Ed. 1-4 section at ADTC was visited and students had class time to complete the questionnaire. Classes were visited only once, so responses from absent students were not collected. Responses to the questionnaire were collated and analysed. The participants were those available and willing to be studied, thereby making them a convenience sample. Interview participants also opted to be

interviewed. The number of students that responded they were definitely not going to teach or yet undecided who consented to be interviewed was 34%.

### 3.3 DATA ANALYSIS METHOD

The numerical data (5-point scale) for each supplied reason was tallied. Many of the supplied reasons for enrolment have an underlying intrinsic, altruistic or extrinsic motivation, and this was examined. Male and female responses were also compared to identify commonalities and differences.

Narrative questionnaire and interview responses were analysed for trends. Some common themes emerged that will help identify the main reasons why students are not choosing to enter the teaching profession.

### 3.4 ETHICAL CONSIDERATIONS

Approval for this research has been awarded by the research committee and the Academic Dean of ADTC. All respondents are over the age of 18. Respondents were given the option to decline to respond.

### 3.5 LIMITATIONS

This study did not include students who were not present on the day the survey was conducted. The absent students make up 12% out of a possible pool of 242 students enrolled in the Bachelor of Education programme at ADTC.

The questionnaire used did not ask students who are planning to teach, whether they are planning to teach in Abu Dhabi's cycle one (elementary) public schools (which is the purpose of the college).

Only two reasons indicating an altruistic motivation were included in the questionnaire. Another altruistic reason was eliminated for being too similar. A replacement for it was overlooked in the short timeframe.

B.Ed. 3 and 4 students were not included in the interview portion of this study as they were out of the college on practical assignments during the time the interviews were conducted.

## 4. RESULTS AND DISCUSSION

### 4.1 QUESTIONNAIRE

A total of 210 surveys were distributed and completed: a response rate of 100%.

7% of participants were male and 93% were female, 32% of students were in the first year of the degree course, 23% in the second year, 20% in the third year and 25% in Year 4.

Table 1. Students' ratings of motivations: Summary statistics

Item numbers (from box 1)	Scale	1	2	3	4	5	Mean	SD	Rank
I want to share my knowledge with my students	I	121	57	23	1	7	1.64	0.94	1
I enjoy working with children	A	107	70	21	3	6	1.70	0.92	2
I want to be a part of the educational reform in Abu Dhabi	A	96	69	30	2	11	1.86	1.05	3
I want to enjoy 3 months of holiday each year	E	100	38	37	15	17	2.09	1.3	4
Teaching is likely to assure me a job after graduation	E	59	84	51	11	3	2.11	0.93	5
Teaching fits in with family life/being a parent	I	62	71	42	9	14	2.20	1.14	6
The teacher has a high status in society	E	64	61	52	20	12	2.31	1.17	7
The possibility of working close to my home	P	72	46	51	13	24	2.37	1.33	8
I want to work in a segregated workplace	P	66	39	60	12	25	2.46	1.33	9
I have always wanted to be a teacher	I	59	61	48	20	22	2.45	1.28	10
ADTC is an easy college to get into/study at	P	43	55	69	23	19	2.62	1.19	11
My family chose the college for me	P	40	43	33	34	56	3.11	1.50	12
I want to obtain a university degree only	P	23	26	52	55	49	3.40	1.29	13
The salary for teachers is high/attractive	E	6	27	61	40	75	3.72	1.16	14
<p>Key:            1 = strongly agree; 2 = agree; 3 = neither agree nor disagree; 4 = disagree; 5 = strongly disagree. A = Altruistic; I = Intrinsic; E = Extrinsic; P = Pragmatic. SD= Standard Deviation.            Source: Questionnaire survey.</p>									

The students' ratings of the motivations behind entering a teacher education programme are shown in Table 1. It can be seen that 'I want to share my knowledge with my students' (intrinsic) and 'I enjoy working with children' (altruistic) were the top reasons overall (85% and 84% strongly agree or agree, respectively) for enrolling at ADTC. This result remained the same when separating the data into male and female participant.

'The salary is high/attractive' was the least chosen reason (36% strongly disagree) for enrolling at ADTC, indicating that for the majority of the students salary was not a motivator.

Overall, 57% of respondents agreed or strongly agreed that they had always desired to be a teacher (see Table 1). Interestingly more males than females claimed they had always wanted to be a teacher and yet more males than females were undecided about pursuing a career in teaching (see Table 3). One third of the students are currently married and as family holds great importance to Emiratis, it is not surprising that a significant percentage (64%) agreed or strongly agreed that a motivation for entering teacher education was that teaching fits in with family life.

Table 2. Motivating factors and gender

Scale	Item Numbers in Questionnaire	Male (n = 17)		Female (n = 193)	
		Mean	SD	Mean	SD
Altruistic	1,6	1.67	0.69	1.79	1.01
Intrinsic	7, 13 & 14	1.96	0.99	2.11	1.19
Extrinsic	4, 5, 10 & 11	2.22	1.16	2.59	1.34
Pragmatic	2, 3, 8, 9 & 12	2.73	1.27	2.80	1.39
Note: p-value in the parenthesis.					
Source: Authors' own work.					

Three months holiday per year was a motivator for 66% of the students, and 59% responded positively to the high status of teachers as a motivation. 68% of participants agreed or strongly agreed that an assured job was a motivator, however it could be asserted

that job opportunities is the aim of most individual's undertaking higher education, so this high number is to be expected. Only 16% of participants claimed that an attractive salary was a motivator.

Pleasingly, 46% of the total students strongly agreed to wanting to be part of the educational reform currently taking place in Abu Dhabi, and another 33% agreed. This indicates a strong desire by the Emirati students to become involved in developing the emirate of Abu Dhabi. This also reflects a strong altruistic motivation among our students. However, this desire to be a part of the educational reform does not specify that this would be fulfilled through teaching. As, Dickson and Le Roux (2012) found, the male Emirati students they interviewed were interested in quick promotion into positions of responsibility, such as vice-principal and principal.

Smaller percentages were reported overall for the pragmatic motivations for choosing to enrol in teacher education. This indicates that, while these reasons may be taken into consideration by some students, they were not the impetus for enrolment. However, half of the students agreed or strongly agreed that the possibility of working close to home was a motivator, just over half of the females indicated that a segregated workplace was a factor and 59% of males stated that the college being easy to get into was a strong motivator (see interview section below).

Contrary to earlier indications, only 11% of the total students strongly agreed that they had enrolled to obtain a university degree only.

Of the 210 respondents, 136 (or 65%) indicated that they would definitely teach upon graduation – a surprisingly positive result (see Table 3). However, this means that 73 (one non-response), or just over one third of students surveyed, are not committed to teaching. Encouragingly, only 3 students responded that they would definitely not teach, while the other 70 remain undecided at this time. The 73 students not committed to teaching were made up of 63 females (33% of the total female participants) and 10 males (59% of the total male participants).

Table 5: Student teachers' intentions to teach upon graduation.

	Females %	Males %
I will definitely teach	67	41
I'm not sure yet	31	59
I will definitely not teach	2	0

*\*One female student did not respond to this question*

A greater proportion of B.Ed. 1 students claimed to definitely want to teach than did the other students. One explanation for this could be that the current first years have not yet been out on practicum into schools and experienced teaching first hand. B.Ed. students in the second to fourth years, who have completed a practicum course each year of their studies, may have been discouraged by the realities of teaching. Due to the major reform, the nature of teaching has changed in cycle one public schools since the B.Ed. 1 students were in those schools themselves as students. However, this would be in contrast to Sinclair (2008) who found that students' commitment to teaching increased after completing their first practicum.

Interestingly, one male student who responded that he would definitely teach upon graduation has left the college since the survey was conducted, due to being accepted to a police training course. His reasons for this change of heart was that he had decided he "didn't want to study", and because he would receive a salary upon starting police training.

It is encouraging, nonetheless, to find that more students are enrolling with (at least) the initial motivation to enter to the teaching profession. However, the significant number of undecided students is cause for concern.

## 4.2 INTERVIEWS

Of the 30 uncommitted B.Ed, 1 and 2 students, 13 were willing to be interview (43%), and of this smaller group, 4 males and 4 females were chosen randomly for further interview. All 8 students agreed to be interviewed, however one female student, Assila (pseudonym),

left the college before the interview could be conducted. She withdrew from the programme due to being pregnant and breaking her leg. Assila had indicated on the questionnaire that she was not sure yet if she would teach. However, in the space to explain further, she wrote 'I have kids and I want to relax', indicating that she did not want to work at all, and didn't have an aversion to teaching specifically.

From the interviews it was revealed that four of the seven interviewees had enrolled at ADTC with the intention to teach, two females and two males. Two interviewees had enrolled despite having no intention of ever teaching, both male, and the final (female) interviewee was undecided upon enrolling. Pseudonyms will be used throughout this section.

For the two male students who had no intention of teaching, the motivation behind enrolling at ADTC was simply to earn a degree. Amer's ambition since he was a child has been to join the police force. According to him, policemen earn a higher salary (than teachers), are well respected (unlike teachers) and even feared. A degree - any degree - qualifies Amer for a one-star ranking upon joining; "Without a star, it is like the army - anyone can boss you around. With a star, you can be the boss!" His reasons for enrolling at ADTC, specifically, were the free tuition and his ability to meet the entry criteria, which in his words was lowered to entice him to join due to low male numbers at the college. A stipend was also offered.

Salim also had no intention to teach, but is undecided about what to do after graduation. One option he is considering is becoming a translator. He enrolled at ADTC because the programme will help him to improve his English and a Bachelor of Education is a 'good qualification'. He also aims to undertake a Masters degree and therefore needs 'any degree' in order to be eligible. He also spoke of the low status of teachers. "In UAE, locals being teachers are like a joke. It is a horrible job and not well respected. You work so hard for little money when you can get a high paying job for easier work."

The interviews with Amer and Salim imply that there is unlikely to be a simple way to attract Emirati males into the profession. Changing the perception of teachers to one that

would be appealing is likely to take time. However the questionnaire responses revealed that about two-thirds of the students overall agreed or strongly agreed that a motivator for them enrolling was the teacher's held a held status in society. It could be concluded that the perceptions of the status of teachers held by males and females differ significantly and the participants of this survey are predominantly female.

The four students who claimed, through the interviews, that they did enrol with intentions to teach upon graduation, had varying reasons for responded that they were not sure yet about teaching upon graduation on the questionnaire.

Zain implied an intrinsic desire to become a teacher, and enjoys teaching younger siblings at home, but is uncertain about securing a teaching position. His concern stems from the fact that his (late) father was Omani and he worries he is not 'Emirati enough' to be employed in Abu Dhabi's public schools. Also concerning him is the requirement to obtain a 6.5 IELTS rating.

Alia also maintains her motivation to teach upon graduation, but is not convinced she will complete her teacher training at ADTC. Alia's initial purpose for wanting to become a teacher stems largely from her having had 'bad' teachers at school and her belief that she can 'do it better', indicating an altruistic drive. She claims the current salary for Emirati teachers is not a reason for or against being a teacher in her opinion. Alia joined ADTC because it is a small college and is teaching specific. However since starting she has found the college administration to be 'disorganised' and 'overly conservative'. Alia is hoping to continue her teacher education outside the UAE.

Similarly, Obaid is interested in teaching, but has also had issues with college management. He feels he was promised a lot upon enrolment and feels these promises have not been kept. Obaid associates the college administration with the Abu Dhabi Education Council who would be his employer if he pursued a teaching career in Abu Dhabi's public schools and therefore is now unsure of this path. Like Alia, he is not influenced either way by the starting salary for teachers; he is more concerned with having a strong and supportive management. Without this, he feels that promotion opportunities will be fewer, indicating a

similar viewpoint to the Emirati males interviewed by Dickson and Le Roux (2102). He does, however, mention that he can earn the same, if not more, money in different jobs.

Mouza started ADTC with an intention to teach that was based on information she had been given by outside parties that the salary for teachers was high, clearly indicating an extrinsic motivation. She claims that since starting the programme, she has learned from graduated students that the salary is much less than she expected and this has changed her decision to be a teacher. She was also not impressed to find out teachers sometimes have to provide cover for absent teachers, that they have administration and other work to do after the students leave, and that teachers are expected to be in the school even when they have a free lesson. She is also affronted by the IELTS requirement. This suggests that Mouza had little idea about the nature of teaching before enrolling. She claims she can earn almost 150% of a teaching salary working in an office. Mouza did concede that she may consider teaching for one or two years just for experience and her own self-esteem.

A salary increase for teachers might encourage Mouza back to the profession. The issues for Alia and Obaid, while more complex, are college-based rather than system-wide issues and therefore potentially easier to rectify, and it is these intrinsically and altruistically motivated students who should be supported on their journey to become educators.

Conversely, Ibtisam, enrolled at ADTC as her first two study choices were either not available in the UAE or discouraged by her father. It was her father who suggested teaching as a career as he had noticed that Ibtisam loved children and was already teaching her younger brothers and sisters at home. "I knew how to deliver the information and create games to teach them." Her father also pointed out that as a teacher she would be helping a new generation of Emiratis and would be contributing to the development of the country, which struck a chord for her. However, she claims the final decision to enrol at ADTC was her own and it was a younger relative calling her 'beautiful teacher' that tipped the scale. Ibtisam was still unsure that she would pursue a teaching career at the time of enrolment but since starting the programme is now convinced that this is the right profession for her.

## 5. CONCLUSION

This study suggests that while enrolling in a teacher education programme does not purport an intention to teach in all students, the majority of Emirati student teachers at ADTC are seeking a teaching career.

Significant percentages of the student body responded that they agreed or strongly agreed that their reasons for entering the teacher education programme at ADTC were 'I enjoy working with children' (84%), 'I want to share my knowledge with my students' (85%) and 'I want to be a part of the educational reform in Abu Dhabi' (79%), indicating strong intrinsic and altruistic motivations. Interestingly only 16% of participants responded positively that a high salary was a reason for enrolment. The other extrinsic motivators were rated highly, supporting Sinclair's (2008) conclusion that student teachers have multiple motivations to teach. Pragmatic motivations also had an impact, particularly working in a segregated workplace for females and the college being easy to get into for the coveted male students. This study also found that experiences during teacher training can have an impact upon the likelihood that students will teach after graduation, both positively and negatively. The ratings of motivations did not differ significantly between male and female students.

An increase in teaching salaries may entice more Emiratis to the teacher profession, however a significant change in the perception of teaching and a transparent promotions path is likely to be needed to encourage male Emiratis to consider teaching.

Of course a claim to definitely be pursuing a teaching career on a questionnaire does not actually mean that this will happen in all cases in reality. Further research could look into the intentions of the same cohort to teach as they get closer to graduation and a follow up survey conducted after graduation. It would also be interesting to conduct the same research on subsequent cohorts, as future students will become more and more impacted by

the education reform underway on public schools – will this attract more students to education?

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## APPENDIX 1 – Questionnaire

Research Survey					
Age:			Year in Programme:	B.Ed.1	B.Ed.2
Gender:	Male	Female	Marital Status:	Single	Married
				Divorced	Widowed
Why did you decide to enrol on a teacher training course?					
1 = strongly agree   2 = agree   3 = neither agree nor disagree   4 = disagree   5 = strongly disagree					
				<b>1</b>	<b>2</b>
				<b>3</b>	<b>4</b>
				<b>5</b>	
I enjoy working with children					
My family chose the college for me					
I want to obtain a university degree only					
The salary for teachers is high/attractive					
I want to enjoy 3 months of holiday each year					
I want to be a part of the educational reform in Abu Dhabi					
I want to share my knowledge with my students					
The possibility of working close to my home					
I want to work in a segregated workplace					
Teaching is likely to assure me a job after graduation					
The teacher has a high status in society					
ECAE is an easy college to get into/study at					
I have always wanted to be a teacher					
Teaching fits in with family life/being a parent					
If you had a reason for enrolling at ECAE that is not listed above, please write it here:					
What are your plans after graduation? Tick <u>one</u> option.					
<input type="checkbox"/>	I will definitely teach				
<input type="checkbox"/>	I'm not sure yet (see over page)				
<input type="checkbox"/>	I will definitely not teach (see over page)				

If you are not sure if you will teach, what are your reasons?

Please put your ID number if you are willing to be interviewed. \_\_\_\_\_

If you will definitely **not** teach, what are your reasons?

Please put your ID number if you are willing to be interviewed. \_\_\_\_\_

**THE EFFECTS OF SOCIAL INTEGRATION  
ON MINORITY STUDENT RETENTION  
AT A PREDOMINANTLY  
WHITE INSTITUTION**

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## **ABSTRACT**

Higher education leaders are not only charged with providing environments conducive to learning, but optimally the environment should aid in the retention and ultimately the graduation of all students. Thus, the retention conversation is broad and encompasses a wide spectrum of research. More specifically, the research identifies academic and social integration as two primary variables required to aid in successful matriculation. This body of research narrowed the retention probe by examining how social perceptions and social integration impact retention among African American and Latino students attending a Predominantly White Institution (PWI). To fulfill the purpose of this study, 50 self-identified, African American and Latino students were administered the Institutional Integration Scale developed by Pascarella and Terenzini (1980). The instrument is a 34 item Likert scale, which examined levels of integration based on five components (a) Peer-Group Interactions, (b) Interactions with Faculty, (c) Faculty Concern for Student Development and Teaching, (d) Academic and Intellectual Development, and (e) Institutional and Goal Commitment. Frequency distributions were used to categorize data and calculate the mean, median and mode for each question. The data revealed there was statistically no relationship between campus connectedness and retention. The results implied that participants at the PWI had developed positive levels of integration socially and academically. Lower composite scores for the sub-scale, Faculty Concern for Student development, suggested that students were unsure as to the faculty's level of concern for minority students. Current minority student graduation rates

imply that a serious discussion of the factors impacting retention must be progressive and ongoing. Theoretical approaches on retention propose that students must obtain academic and social integration for persistence to occur (Tinto, 1993). This research provides implications for practice and recommendations to address social integration and the impact of untraditional faculty interactions.

Louisiana Safe and Supportive Schools Initiative: A Four-Year Comparison of School Climate  
Measures in Diverse School Districts

Educational Measurement and Evaluation

Workshop

The Louisiana Safe and Supportive School Initiative (LSSSI) is a four-year project by the Louisiana State Department of Education and eight diverse districts around the state. Now in the fourth year of implementation, LSSSI evaluates a school's climate using research-based interventions and data analysis. District personnel from Caddo Parish and LSUS will share their successful strategies regarding prevention, as well as results of data from participating districts.

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## Louisiana Safe and Supportive Schools Initiative: A Four-Year Comparison of School Climate Measures in Diverse School Districts

According to the Centers for Disease Control and Prevention (2013), approximately 20% of American children may have a mental disorder. As a part of a state-wide effort to reduce substance abuse, victimization, and drop-out rates, a four-year prevention project was initiated in 2010. The Louisiana Safe and Supportive Schools Initiative (LSSSI) district liaisons and coaches evaluate a school's climate based on four measures: 1) support and engagement (40%); 2) violence, victimization, and substance abuse (40%); 3) attendance rates (10%), and dropout rates (10%). Eight school districts were selected to participate: Caddo, East Baton Rouge, Lafayette, Lafourche, Jefferson, Plaquemines, Tangipahoa, and Terrebonne. Now beginning the fourth year of implementation, Caddo Parish School District and Louisiana State University in Shreveport personnel will share their successful implementation programs and strategies regarding prevention and how they merged those initiatives with existing mandates for better use of personnel and resources. Using a national climate survey, discipline data, and dropout rates, Caddo Parish personnel have seen a reduction in violence, victimization, substance abuse, and dropout rates, as well as statistically significant increases in attendance rates, support, and school engagement. In addition, specific district and statewide strategies, as well as results for the first 3 years of this on-going project, will be shared.

Exploring the Blend of Traditional and Contemporary Active Learning Strategies for Undergraduate Students

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This presentation will describe our experience exploring and reflecting on innovative teaching strategies in nursing education.

As student populations and their expectations of the learning environment become increasingly diverse, maintaining their engagement during a four hour class and meeting different learning styles has become increasingly challenging.

In the 3rd year of our undergraduate nursing course, classroom learning is offered intensively for one week and then one day each week for five weeks, and focuses on a variety of topics. A brief power-point lecture is presented to highlight key-points from the

pre-class readings. To enhance engagement, and to promote higher forms of thinking, class or small group discussion, video clips, and creative activities are also implemented. We have implemented “Think Tanks” as one example of an innovative strategy. Through pre-readings and online modules, students prepare for each class. During class time, they meet in small working groups to discuss their prep work, and relevant topics guided by the professor. Small group discussion is connected to the overall class content and may take the form of questions, case studies or relevant events in health care. In turn, the students are invited to summarize their discussions and make recommendations. Their own creative and innovative approaches to sharing their work is also encouraged. During this presentation we will share examples of how we have operationalized small group discussion into these forms of engagement.

**Emotional/behavioral difficulties is negatively associated with academic  
performance in special education immigrant youth**

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**Objective:**

The literature emphasizes the role of school environment and peer relationships in supporting the mental health and academic achievement of immigrant youth. The aim of this work is to study the association between emotional difficulties and academic performance and their correlates in first and second generation immigrants assigned to a special class.

**Method:**

Participants were 464 high school students enrolled in special classes assigned for students with learning and/or behavioral problems. Emotional and behavioral symptoms and associated impairment were measured by the youth and their teachers with the Strengths and Difficulties Questionnaire (SDQ). Relationship with peers was measured using the Adolescent Friendship Inventory (AFI). Classroom environment was assessed by the What is Happening in this Class (WIHIC)? Questionnaire. Mathematics and French grades were also recorded.

**Results:**

Our students had an approximate mean age of 14 years, were largely second (46.6%) or first (42.7%) generation immigrants. Almost all (92.5%) of these youth reported being cared for by their mother, evaluated their family economic status to be comfortable (81.5%) and lived in households with an average of five members.

Demographically, self SDQ total score decreased with age ( $p = .028$ ) and increased with witnessing violence or persecution in the country of origin ( $p = .050$ ) or a lower socioeconomic status ( $p = .007$ ). Teacher SDQ total score was significantly lower for girls than for boys ( $p = .009$ ).

As expected, emotional and behavioral symptoms and school performance were significantly associated. Both self and teacher reported total symptoms were significantly negatively correlated to French (self:  $p = .015$ , teacher:  $p = .001$ ) and mathematics (self:  $p = .006$ , teacher:  $p = .002$ ) grades.

The presence of the mother ( $p = .029$ ) and relationships with peers ( $p < .001$ ) were significant protective factors. The classroom environment was negatively correlated with symptoms and impairment and positively with grades (WIHIC with self SDQ total score ( $p = .033$ ), teacher SDQ ( $p = .004$ ), French ( $p = .002$ ) and Mathematics ( $p = .028$ ) grades).

Linear regression analysis showed that having a mother caregiver and positive relationship with peers significantly contribute to self-reported SDQ total symptoms ( $P < .001$ ) while age was inversely associated with teacher SDQ total symptoms score ( $P = .001$ ).

### **Conclusions:**

The findings emphasize the need to adopt an eco-systemic model to understand the relations between emotional and behavioral symptoms and academic performance in immigrant youth identified as having difficulties by the school. The salience of peer relationships and classroom environment suggest that schools need to promote positive school based relationship to improve these youth mental health.

## **Teacher Self-Efficacy Findings from the Teacher-to-Teacher (T2T) Professional Development Model in Elementary Science**

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### **Abstract**

The Frameworks for Success in Science Math/Science Partnership (MSP) Title IIB project was designed to increase teacher content knowledge and pedagogical skills in elementary science education using a Teacher-to-Teacher (T2T) professional development (PD) model. Participants in this study included elementary school teachers from three of the seven schools that fed into Hilo High School on Hawaii Island. Both qualitative and quantitative findings from the first cohort of participants in the MSP T2T PD project suggested significant changes in teacher self-efficacy related to science attitudes, behaviors, skills and perceptions of supporting professional learning communities (PLCs).

### **Introduction**

Conderman and Sheldon Woods (2008) suggested that although science plays a central role in our world today, science instruction seems to be minimized, particularly at the elementary grade levels. To cultivate higher-order thinking, as well as meet the changing demands of society, the quality and quantity of science teaching and learning must be increased in the elementary classroom. According to Abell and Lee (2008), the most effective professional development in science has: (a) relevant and applicable content directly connected to the classroom, (b) teachers learning in a way similar to the way their students will learn, (c) collaborative teacher relationships, and (d) sustained opportunities to collaborate and reflect over time (p.62).

Researchers have investigated the construct of efficacy (Bandura, 1977, 2006a; Riggs & Enochs, 1990; Ramey-Gassert, Shroyer & Staver, 1996; Tschannen-Moran, Hoy & Hoy, 1998).

Professional and conceptual development in teachers has also been explored (Gordon, 1990; Sheerer, 1997; Skaalvik & Skaalvik, 2007). Supporting science content knowledge development, and effective science teaching, is imperative for elementary school teachers.

### **Purpose of Study**

The purpose of this study was to examine the changes in self-efficacy elementary teachers experienced as they participated in in the Frameworks for Success in Science Math/Science Partnership Title IIB Teacher-to-Teacher Professional Development (MSP T2T PD) project. Specifically, this study focused on the identification and description of the changes in teachers' attitudes, behaviors and skills related to science instruction at the elementary level.

### **Research Question**

One research question was posed for this study. How does a teacher's sense of self-efficacy (attitude) towards teaching elementary science change over a sustained period of professional development?

## **Methodology**

### **Research Design**

This mixed-methods study used two research designs. The quantitative portion of the study used a one-group, post-test design with teacher participants. The qualitative portion of the study used a semi-structured interview protocol with a sub-sample of teacher participants.

### **Subjects**

Eighteen teachers from three different elementary schools, who formed the first cohort of participants in the MSP T2T PD project, were the subjects of this study. Sixteen of the teachers were female, and two of the teachers were male. All teachers were fully certified to teach at the elementary level. Eleven teachers held bachelor's degrees, and 7 teachers held master's degrees. Teachers ranged from 6 to 27 years of teaching experience, with an average of 13.4 years.

### **Instrumentation and Administration**

Research data was gathered in two ways for this study—first, through the Teacher Retrospective Self-Efficacy Questionnaire and, second, through participant interviews. Both instruments were administered to teacher at the conclusion of their second year of participation in the MSP T2T PD program.

**Teacher Retrospective Self-Efficacy Questionnaire (TRSEQ).** The TRSEQ was developed through analyzing and adapting components of several existing surveys (Bleicher, R.E., 2004; Koehler, J.R., 2006; Tschannen-Moran, Woolfolk Hoy & Hoy, 1998; Woolfolk Hoy, 2000). Internal consistency reliability was addressed by the fact that all survey items represented only one construct—self-efficacy. Cronbach's alpha was used to calculate the reliability for the TRSEQ pre and post questions within the survey. Findings yielded a pre score of 0.921 and a post score of 0.951, indicating very high instrument reliability. Two measures of validity were established—content validity and construct validity. TRSEQ items were adapted from already established surveys of teacher self-efficacy. The content was further adapted to reflect the behaviors and skills of elementary science teachers. Construct validity was addressed by including items that specifically described the behaviors and skills of self-efficacy in science

teaching. The TRSEQ was administered to teachers during the summer after their second year of participation in the MPS T2T PD program.

**Participant Interviews.** A Semi-Structured Interview Protocol (SSIP) was developed that addressed three broad categories—(a) efficacy and attitude towards teaching science, (b) the skills and behaviors needed to plan and teach science lessons, and (c) feelings about professional learning communities (PLCs). The interviews took 25-30 minutes to complete. Each interview was conducted in person. Interviews were audiotaped and transcribed for analysis. Threats to both descriptive and interpretive validity were addressed. Respondents were each given a copy of the transcript to check for accuracy, and an external auditor verified the transcripts with the audiotapes.

## Data Analysis

**Retrospective Self-Efficacy Questionnaire Pre/Post Data Analysis.** Since the sample size for Cohort I ( $n=18$ ) was smaller than the recommended size for parametric tests, a Wilcoxon signed-ranks test was first conducted on the total pre and post scores for the Teacher Retrospective Self-Efficacy Questionnaire. (See Table 1 below.)

**Table 1**  
**Wilcoxon Signed-Ranks Pre/Post Teacher Retrospective Self-Efficacy Questionnaire**

	RpostTotal - RpreTotal
Z	-3.726 <sup>a</sup>
Asymp. Sig. (2-tailed)	.000

Table 1 reveals a statistically significant increase in the total scores on the Teacher Retrospective Self-Efficacy Questionnaire following the MSP T2T PD experience,  $z=3.726$   $p < .001$ , with a medium effect size ( $r=.621$ ). The median score increased from the pre-survey scores based on experience prior to the MSP professional development ( $Mdn=23$ ) to the post score based on their perceptions after completing two years of T2T professional development ( $Mdn=39.5$ ).

In order to confirm the non-parametric results, a more robust paired samples  $t$  test was conducted with the totals for the pre and post responses ( $M_{pre}=25.22$ ,  $SD=6.5$ ,  $M_{post}=40.4$ ,  $SD=4.97$ ). (See Table 2 below.) There was a significant increase in the total scores for the Teacher Retrospective Self-Efficacy Questionnaire pre score ( $M=25.2$ ,  $SD=6.5$ ) and post score ( $M=40.4$ ,  $SD=4.9$ ) conditions  $t=10.6$ ,  $p<.01$ .

**Table 2**  
**Paired Samples  $t$  Test – Pre/Post Teacher Retrospective Self-Efficacy Questionnaire**

	Mean	Std. Deviation	Std. Error	Paired Differences		$t$	$df$	Sig. (2-tailed)
				95% Confidence Interval of the Difference				
				Lower	Upper			
RpostTotal - RpreTotal	15.222	6.093	1.436	12.192	18.252	10.600	17	.000

**Participant Interviews.** Three broad categories of questions were explored through the participant interviews. They were: (a) efficacy and attitude towards teaching science, (b) the skills and behaviors needed to plan and teach science lessons, and (c) feelings about professional learning communities (PLCs). Five of the 18 teachers were interviewed. The five teachers were purposely selected from different grade levels (grades K-6), with at least one teacher selected from each of the three participating schools. Further, in order to assure a diverse representation of teachers, ethnicities and years of experience were also considered.

**Analyzing Transcripts and Unitizing.** All interview audiotapes were transcribed to electronic documents. Then the Coding Scheme for Interviews of Teachers was developed in order to analyze the interviews.

Through content analysis of the interview transcripts, categories emerged. They included discussion related to:

1. educational background,
2. prior science experiences,
3. current science experiences,
4. feelings about current science lessons,
5. feelings about the grade-level PLC,
6. lesson prep skills,
7. lesson “habits of mind,”
8. science lesson examples,
9. changes to lesson examples,
10. success of lessons,
11. PLC configuration, and
12. feelings about peers.

Each category was determined to be complete when both “internal homogeneity and external heterogeneity” criteria were met (Patton, 2002, p. 465).

After reviewing and placing categories within quadrants, the process of saliency analysis (Buetow, 2010) was completed. As can be seen in Table 3: Saliency Analysis of Teacher Interviews below, the categories were placed into one of four quadrants: (1) highly important and recurrent, (2) highly important but not recurrent, (3) not highly important but recurrent, and (4) neither highly important nor recurrent.

**Table 3**  
**Saliency Analysis of Teacher Interviews**

<p><b>Quadrant 1</b> <u>Highly Important and Recurrent</u></p> <ul style="list-style-type: none"> <li>• Sciences Experiences</li> <li>• PLC Support</li> <li>• Time to Prepare/Understand Lessons</li> <li>• Student Engagement</li> </ul>	<p><b>Quadrant 2</b> <u>Highly Important But Not Recurrent</u></p> <ul style="list-style-type: none"> <li>• Professional Growth</li> <li>• Teacher Learning the Science First</li> <li>• Teachers Teaching Teachers</li> <li>• Older Teachers Learning New Tricks</li> </ul>
<p><b>Quadrant 3</b></p>	<p><b>Quadrant 4</b></p>

Not Highly Important But Recurrent	Neither Highly Important Nor Recurrent
<ul style="list-style-type: none"> <li>• Organization (binders, material prep)</li> <li>• Collaboration/Sharing</li> <li>• Revisions/Extension of Lessons</li> <li>• Cooperative Learning</li> <li>• Hands-on</li> <li>• Differentiation</li> <li>• Integration</li> <li>• Science Tools/Materials Used</li> </ul>	<ul style="list-style-type: none"> <li>• Educational Background</li> <li>• Use of SMART Boards</li> </ul>

Once the saliency analysis using quadrants was completed, major themes were identified. The Quadrant 1: Highly Important and Recurrent themes that emerged included: (1) impact of science experiences, (2) impact of grade-level PLCs, (3) time, and (4) student engagement. It became apparent that much of what was placed in Quadrant 2 could also be categorized within the themes developed above, except (5) professional growth, which became the fifth major theme. Each of the items in quadrant three supported the four major themes described above and thus did not provide any additional themes.

### Limitations

There were three limitations identified for this research study. First, there were a small number of participants (18) who participated in this study. Consequently, generalizability of the data to larger populations would be limited. Second, participating teachers were self-selected for the project and, therefore, self-selected for this research study as well. Finally, this research was not a randomized controlled trial study because the T2T model is still under development, and the resources were not available for testing effectiveness via a larger experimental study.

## Findings

### Findings for the Teacher Retrospective Self-Efficacy Questionnaire

The Teacher Retrospective Self-Efficacy Questionnaire was used to determine how the teachers perceived their changes in self-efficacy over the first two years of the MSP T2T PD project. According to the data, there were statistically significant positive changes from the pre to the post total score on the survey. The pre ( $M=2.5$ ) indicated the average answer choice of “Very Little” to “Some” for the teacher’s perceived sense of efficacy prior to participating in the MSP grant. The post ( $M=40.4$ ) total score indicated an average response of “Quite a Bit” for the survey, with two of the 18 teachers selecting “A Great Deal” as their primary response. The data from the parametric and non-parametric tests suggest that teachers reported they were feeling more confident and doing more science in their classrooms after participating in the project over the past two years.

### Findings for the Participant Interviews

The differences between how teachers felt before and after participating in the MSP T2T PD project were shared during the interviews. The word “confident” appeared multiple times in all five interviews, as did positive descriptors like “supported,” “successful,” “accomplished,”

“significant” and “reflective.” The teachers also emphasized that they enjoyed the sharing that occurred in their regular PLC meetings, as well as the support they received. Overall, the interview themes suggested that the teachers believed the MSP T2T PD model used in their grade-level PLCs allowed for substantial professional growth in science teaching and learning.

Prior to the project, three of the five teachers stated that they did not have positive science experiences. One teacher shared, “So one of my [prior experiences] was taking a science class. It was astronomy. It was Astronomy 101. It was at the University of Hawaii at Manoa, and it was just one of my harder classes in my whole educational career. Just taking the class and understanding the concepts and just struggling with that kind of class . . . .”

A second teacher shared that she did not have positive experiences in science. She stated that one of her classes at the University of Hawaii at Hilo “did not prepare” her to teach in her own classroom. “I never had very good experiences in science. [They] were not positive. They were negative.” In addition, her experiences were mostly paper/pencil and “very boring”—as both as a student and as a teacher with her first students.

The third teacher stated that she “wasn’t that into science” because her experiences were “. . . at times intimidating. Some of the astronomy was just overwhelming. The chemistry I took as a summer course, and that was intense.” However, this teacher did end by saying that her experiences “overall [were] positive” due to having several classes with hands-on experiences to augment the textbook.

In contrast to the past, current science experiences were more positive in tone. Two of the teachers stated that they “learned a lot” over the last two years in the MSP T2T PD project. One teacher shared, “. . . over [the] years with MSP, I feel really comfortable. I feel prepared. I know I have more knowledge now, and when I do science with the kids, they’re more excited because I know how to better teach science.”

Additionally, teachers shared that they became more organized, excited, and comfortable with the science content and pedagogy that they developed and implemented. One teacher commented, “I’ve learned a lot, and I’ve also gotten really organized with science. I feel like Ms. Frizzle with lots of growth [when] doing hands-on science experiences. I’ve really had a lot of growth because there’re a lot of things I wouldn’t have done if I didn’t participate, mainly a lot of hands-on, I guess, because, like I said, in college they taught [using] pencil/paper.”

The word “confident” appeared repeatedly throughout two of the five teachers’ interviews. As one teacher explained, “I think for me, my teaching of science changed. Within myself, I feel more comfortable, more knowledgeable and more confident in the science curriculum. And when a teacher feels more comfortable and more knowledgeable, students will have an easier time understanding what you’re trying to teach them.”

When questioned about how she feels about science after participating in the T2T PD project, one teacher stated that she is better at teaching science. Prior to the project, she did “activities and fun” but didn’t really teach science. Now, she feels that she is able to meet the kids where they are and take them to the next level by setting the stage and facilitating their science learning. Two key words described her current feelings towards science—accomplished and significant. She also stated, “I really get [into] science now that I’ve been participating in the grant. I can kinda build on what they know and I just . . . [meet] the kids where they’re at and [take] them to the next level.”

Throughout the interviews, it was evident that science teacher self-efficacy improved through teacher participation in the MSP T2T PD project.

## Conclusions

The findings indicated that teachers felt supported by MSP T2T PD model in both physical and social ways. All of their responses aligned with what Bolman and Deal (2008) address as the structural frame—the one that looks at the “social architecture of work” (p. 106).

This study reinforced the idea that teachers grow and develop over time. The prior literature only described, in a limited ways, what efficacy looks like at one moment in time (Bandura, 1977, 2006a; Riggs & Enochs, 1990; Ramey-Gassert, Shroyer & Staver, 1996; Tschannen-Moran, Hoy & Hoy, 1998). When teachers are supported by the MSP T2T PD model over a two- or three-year period, they do learn more than basic science content because they begin to internalize and implement science experiences for their students that are deeper and more engaging than those simple activities they did in the past (if they even taught science). In addition, as they continue to learn and become more confident, they also recognize what they have not quite understood and they move towards trying to improve in those areas; they now know what they don't know, so they can learn more about it, which in turn will support their identification and addressing of misconceptions in their student's learning. Finally, as the teachers move towards a higher sense of efficacy, their feelings towards learning challenging material or experiments changes to a “can do” attitude, and they take on the challenge of learning and teaching new skills.

Finally, the ability to take this professional development model and use it to help teachers with the Common Core Standards needs to be explored. There needs to be a way to support teachers and schools through the MSP T2T PD model to continually improve teaching and learning.

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Teacher Self-Efficacy Findings from the Teacher-to-Teacher (T2T) Professional Development Model in Elementary Science

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The Frameworks for Success in Science Math/Science Partnership (MSP) Title IIB project was designed to increase teacher content knowledge and pedagogical skills in elementary science education using a Teacher-to-Teacher (T2T) professional development (PD) model. Participants included elementary school teachers from the three schools that fed into Hilo Intermediate and Hilo High School on Hawaii Island. Both qualitative and quantitative findings from the first cohort of participants in the MSP T2T PD project suggested significant changes in teacher science self-efficacy related to attitudes, behaviors, and skills.

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6. Abstract :

### **An Analysis of Kindergarten Activities on Social Studies**

This study aims at exploring the general trends of kindergarten activities on social studies presented in daily educational plans written by kindergarten teachers in Korea. In particular, the proportion of social studies activities, the contents and themes of social studies that embedded in the activities, the expressed types of the activities, and the age-related differences are being examined. For this purpose, 9 kindergarten teachers (3 teachers per each age level of young children: 3, 4, 5) provided their daily educational plans for a year. Data analysis is being conducted based on the classification criteria proposed by Song (2010),

NCSS (2010), Seefeldt, Castle, and Falconer (2009), and Lee, Yoo, and Lee (2005). The findings of this study will be presented and discussed in terms of the implications for early childhood practice and teacher education.

**Title:** From Higher Ed. to Primary Classrooms, Global Learning = Meaningful Learning

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### **Abstract**

Northern Arizona University has received international recognition for its significant effort to embed global learning outcomes into the higher education environment through its Global Learning Initiative (GLI). GLI at NAU is embodied by the provision of multiple, intentional, substantive learning experiences to infuse global perspectives throughout the academic disciplines. Departments were invited to participate in conversations and collaborations that would ultimately result in the adoption by the university of three global themes: global engagement, environmental sustainability and diversity. As global education was being investigated and implemented by departments across the university, faculty members of the NAU Yuma Branch Campus Education Department considered how best to develop and incorporate GL outcomes to benefit pre-service teachers; outcomes that would be both meaningful and aligned to the teaching and learning standards for which they would soon be responsible. Our connection to global competencies lay in the pedagogies of teaching and learning that foster critical thinking, problem finding, framing, and solving, and creative thinking; and that support authentic, student-led investigations. When two first year teachers implemented the service-learning curriculum they had constructed in an NAU education methods course, they were able to observe and document those global learning competencies under construction in their second grade classroom. In addition, they found that by facilitating the inquiry-based project, their young students grew as decision-makers who were more comfortable with complex challenges, more confident in themselves and more excited to come to school! Inquiry-based learning experiences spark the curiosity that drives meaning-making through analysis, synthesis, and evaluation at all grade levels, and even more importantly, makes possible those moments of challenge and discovery that combine to not only to develop global competencies, but to inspire life-long learning.



## **Teaching Critical-Thinking: The Promise of Integrated Case Analysis**

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### **Abstract**

This paper advances critical-thinking teaching practice through a 3-course module at the front end of an MBA program which incrementally builds students' critical thinking abilities. It describes an integrated case analysis approach that builds on Bloom's Taxonomy and Klebba and Hamilton's Structured Case Analysis approach that diminishes typical challenges to teaching critical thinking.

### **Introduction**

Despite broad longstanding consensus around the need for Business educators to develop students' critical thinking skills, schools still appear to be struggling with how to do so. The case has been made that university graduates simply do not possess the critical thinking skills desired by employers (Braun, 2004; Smith, 2003), that they over-rely on formulaic models with a

consequent inability to deeply examine them (Martin, 2010; Nentl & Zietlow, 2008), that efforts in business schools to teach critical thinking have been “wanting in depth and substance” (Smith, 2003). This gap in Business-school education has been linked to challenges in integrating critical thinking into curricula due to a lack of training for faculty, a lack of information about critical thinking, preconceptions about the subject, and a lack of time available to teach it (Snyder & Snyder, 2008). A further challenge emerges from the fact that critical thinking is simply a very hard thing to do (Gelder, 2005). According to Gelder, its reliance on both lower and higher-level cognitive capacities makes learning critical thinking as difficult as learning a second language and thus “is more of a lifelong journey than something picked up in a two-week module.” (Gelder, 2005)

### **Critical Thinking and Its Instruction in Business Schools**

The variety of definitions and conceptualizations of critical thinking in the literature demonstrates a wide range of understanding. Indeed, at the broadest level, critical thinking has been understood from two primary perspectives. One view, most notably put forward by Brookfield, frames critical thinking within the context of critiquing society (Brookfield, 1987). The other, which is the approach we have taken, views critical thinking in the context of strong analysis/argumentation. Definitions in this latter perspective range on a continuum from simple to complex. An example of a simpler description sees critical thinking as “reasonably reflective thinking that is focused on deciding what to believe or do” (Ennis, 1991). The more complex end of the continuum describes critical thinking as:

The intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by,

observation, experience, reflection, reasoning, or communication, as a guide to belief and action. In its exemplary form, it is based on universal intellectual values that transcend subject matter divisions: clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness. (Foundation for Critical Thinking, 2013)

Huitt finds a mid-point on the continuum by defining critical thinking as “the disciplined mental activity of evaluating arguments or propositions and making judgments that can guide the development of beliefs and taking action" (Huitt, 1998).

Regardless of the specific definition, a common approach to understanding critical thinking in the context of business education is framed around six core critical thinking skills: interpretation, analysis, inference, evaluation, explanation, self-regulation. (Facione, 1998) In one form or another, elements of these six skills appear in the majority of conceptualizations of critical thinking. Common also to most conceptualizations is the notion that critical thinking is about the use of cognitive skills directed towards a desirable outcome. As such it is purposeful, reasoned, and goal-directed (Halpern, 1999).

For the purposes of this article, and for our approach to developing critical thinking skills in the MBA program, we believe that critical thinking is the ability to construct cogent, coherent, and concise arguments in support of a specific course of action. Doing so requires the application of subject-specific theories, concepts or frameworks towards the explication of personal and/or organizational issues, and the synthesis of complex and often interrelated information. In essence it means being able to articulate logically (although not necessarily in this order) what should happen, why it should happen and ultimately how it should happen.

## **The Role of the Case Study**

The case study method, a pedagogical approach that asks students to navigate, make decisions, and support their perspectives about personal and/or organizational challenges based on real-world situations, often has been regarded as a tool for developing critical thinking and analytical skills (Brooke, 2006; Jerrard, 2005; Kreber, 2001; Kunselman & Johnson, 2004; Popil, 2011; Tomey, 2003). Brooke contrasts the “banking method of education” where students “spit back the facts to the instructor as provided” and where “there is no critical thinking involved” to the case method where “students and the professor engage in a Socratic dialogue which fosters critical thinking skills” (Brooke, 2006, p. 142). Kreber argues that “the case study approach to post-secondary teaching would be particularly effective in fostering students’ growth in critical thinking and self-direction as case studies have the potential to create genuine experiential learning experiences for students” (2001, p. 226). These sentiments are echoed by educators in a multitude of disciplines. For example, according to one Professor of Science Education, “If reading, arguing, and challenging are hallmarks of critical thinking, then case studies are the poster children for the process. [Cases] grapple with the essence of critical thinking—asking for evidence—developing a habit of mind that should permeate everyday life” (Herreid, 1994).

### **Best Practices in Critical Thinking Instruction**

Just as there are a range of conceptualizations of critical thinking, so too are there a range of perspectives about how to actually teach critical thinking. That said, a review of the literature suggests that four pedagogical approaches can be identified as best practices.

- 1. Explicit instruction around what thinking critically means and how students can recognize when they are doing it.** There appears broad consensus that “critical thinking

skills and abilities are unlikely to develop in the absence of explicit instruction” (Lai, 2011). Critical thinking is a complex topic with its own theories, along with its own cognitive and attitudinal dimensions, and students must know **how** to think critically and then must be inclined to do so (Smith, 2003). The implication for instructors is that they must not only clearly define thinking goals for students but also help them develop an awareness of their own thinking, or metacognition: “[Metacognition] is considered an important component of higher-order thinking skills because the student not only recognises the practice of critical thinking skills but also is able to focus on, develop, and control their use” (Joanne M Klebba & Janet G Hamilton, 2007).

- 2. Embedded instruction, which promotes the use of critical thinking concepts in discipline-focused classes.** While students require explicit instruction in critical thinking, it is not sufficient (Lazzara et al., 2009). According to Lai, “There appear to be both general and domain-specific aspects of critical thinking, which suggests that instruction should represent a fusion of preparation in general critical thinking principles, as well as practice in applying critical thinking skills within the context of specific domains” (Lai, 2011) and “Transfer of critical thinking skills to new contexts is unlikely to occur unless students are specifically taught to transfer by sensitizing them to deep problem structures and are given adequate opportunities to rehearse critical thinking skills in a variety of domains.” (Lai, 2011)
- 3. The use of active and experiential learning.** To increase critical thinking abilities, instructors must move beyond demanding “standard responses to questions focused on mere knowledge and comprehension” and “regurgitating a step based definition of a framework” (French & Tracey, 2008) and move toward presenting students with

opportunities to actively use new knowledge by applying it. The goal here is to build students' abstract thinking skills, so that they can apply principles learned in one context to another. According to Smith, experiential knowledge is “the essential raw material for effective thinking [and] abstraction is the indispensable means for putting the knowledge to work. Because no two experiences are ever the same, one must be able to conceive experienced phenomena in more fundamental and abstract terms, so past experiences of an appropriate kind are recalled when needed.” (Smith, 2003).

**4. The scaffolding of instruction, so that students can gradually build skills and abilities.**

Instructors must be strategic in determining the amount and type of guidance that will most benefit students at each stage of the learning process. Instructors should provide sufficient support and instruction to enable students to incrementally develop abilities and should gradually withdraw support, so that students become independent thinkers, as student abilities develop (Althausen & Darnall, 2001; Bensley, 2010; Joanne M Klebba & Janet G Hamilton, 2007). According to Bensley (2010, p?):

Scaffolding involves providing product guidelines, rules, and other frameworks to support the process of thinking....Modeling, scaffolding, and guided practice are especially useful in helping students first acquire CT skills. After sufficient practice, however, instructors should fade these and have students do more challenging assignments without these supports to promote transfer.

For the most part, the case method of instruction promotes the latter three principles of critical thinking instruction, but not the first. The case method excels at embedding critical thinking training throughout the curriculum, ensuring that students are practicing and improving their analytical skills, while they learn key theories and information in the various business disciplines like HR, OB, Accounting, and Marketing. Also the case method provides a rigorous and well-developed approach for fostering active learning. Moreover, a degree of scaffolding can be built into case-method pedagogy. For example, Erskine (Erskine, Leenders, & Mauffette-Leenders, 1998) advise that, in selecting cases, faculty should refer to the “case difficulty cube,” which can be used to assess cases according to how long they are, how complex they are, and the degree of definition around the decision that needs to be made.

That said, it has been pointed out that faculty generally lack the training to properly teach critical thinking, as a subject area, and that even with the appropriate training, they lack the time to include explicit instruction in the curriculum (Snyder & Snyder, 2008). This latter point about the conflict between time spent on course content vs. time spent on critical thinking is a very pragmatic one for teachers; put simply, there is an assertion that focusing on critical thinking takes away from time on course content (McEwen, 1994).

In short, although most Business schools and faculty are committed to critical thinking skills and many use the case method to develop them, case pedagogy, in itself, does not fully address what students need to develop as critical thinkers. But by drawing and building on two foundational frameworks, Bloom’s Taxonomy of Educational Objectives and Structured Case Analysis, both outlined below, this paper’s authors were able to design a 3-course module at the front end of an MBA curriculum that better satisfies all the best practices principles of critical thinking instruction identified above.

## Relevant Frameworks

### Bloom's Taxonomy

*Bloom's Taxonomy of Educational Objectives* (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956) was originally published in 1956 as an effort to clarify and organize educational goals. The taxonomy classifies cognitive skills into 6 categories, *Knowledge, Comprehension, Application, Analysis, Synthesis, Evaluation*, which are sequenced from most simple to most complex and from most concrete to most abstract. The taxonomy assumes that each stage builds on and includes that which comes before, which is to say, for example, that in order *apply* a concept, one must first possess *knowledge* and *comprehension* of it.

Bloom's taxonomy was originally designed to facilitate assessment, with the goal of enabling educators to exchange tests between institutions. However, in the time since its inception, it has been widely adopted as a tool for curriculum design. It appears to be particularly helpful in the development of critical thinking skills, because it addresses a fundamental challenge, mentioned above, that is faced by many faculty members, who are trained in their discipline and not explicitly in critical thinking. The advantage of Bloom's taxonomy is that it makes the steps towards better thinking explicit, providing the instructor both with a map of how to get where they want to go, and the language to articulate these steps to students.

Numerous management educators from a wide range of disciplines, including Organizational Behavior, Entrepreneurship, Marketing, and Business Policy, have recognized the value of Bloom's taxonomy to guide course/class design (Athanassiou, N., Jeanne, M. M., Harvey, C., 2003; Betts, 2008; Cannon & Feinstein, 2005; Forbes & Clabaugh, 1995; Lang & Dittrich, 1982; Leach, 2007). Noting students' inability to solve unstructured problems, Lang and Dittrich (1982) employed it in the design and

teaching of a capstone Business Policy class. Both Cannon & Feinsten (2005) and Leach (2007), in the context of, respectively, employing service learning and teaching entrepreneurship, have employed the taxonomy to guide in bridging the knowing-doing gap, so that those they teach can move from being students able to understand and apply concepts in the orderly environment of the classroom to being managers or entrepreneurs with increased capability in using these concepts in facing chaotic real-world challenges. Braun has demonstrated that the levels of learning, as defined by Bloom's taxonomy can be directly mapped onto the steps of problem solving that students are expected to undergo in completing a case analysis. For example, in tackling a case study, a student must first fulfill the lowest level of cognitive expectation according to Bloom, the acquisition of *Knowledge*, through "reading the case study" to "understand the problem situation" (Braun, 2004). The student must then achieve *Comprehension* through "identifying business concepts embedded/illustrated in the case," followed by achieving *Application* through "comprehending the effects of the business concepts within the case" (Braun, 2004, p. 233).

In all of the above examples, Bloom's taxonomy was perceived as instrumental in designing classes which helped students move from fulfilling less realistic and more structured tasks to navigating more realistic tasks of the type that move more closely to emulating what they will encounter as working professionals.

### **Structured Case Analysis**

Perhaps most relevant to our own work, both as authors of this paper and instructors of our respective MBA classes, is Klebba and Hamilton's, where it is pointed out that although case analysis holds the potential to offer students deep learning in critical thinking, "a process to systemically further this result in case courses has not emerged" (Joanne M Klebba & Janet G Hamilton, 2007). Their solution is a "structured case analysis" (SCA) approach, which in using

Bloom's taxonomy, "integrates a multilevel incremental learning process into case analysis" (Joanne M Klebba & Janet G Hamilton, 2007). In practical terms, the SCA approach advocates simultaneously building both students' content knowledge and critical thinking skills in an incremental manner by having them participate in a series of increasingly less structured exercises, as they gradually acquire the skills to tackle a structured and then an unstructured case analysis.

Klebba and Hamilton propose that instructional activities exist on a hierarchy from less to more realistic: lectures, followed by problem exercises, laboratory exercises, simulation exercises, structured cases, unstructured cases, live business projects. As activities ascend in the level of realism they presumably ascend Bloom's hierarchy. For example, completing case exercises, in which an instructor asks pointed questions of limited scope, requires less complex thinking skills than does completing an overall case study, whereby students must analyze complex situations and make recommendations. Real life, or in the case of MBAs, operating in the real world as a working manager requires the most complex thinking skills of all. The case study approach lies somewhere in the middle of the realism scale. In designing a class using the SCA approach, faculty strategically sequence instructional activities so they move from less to more realistic.

In the remainder of this paper we build on Klebba and Hamilton's work, by introducing an alternative version of the SCA approach. As outlined in the following section, our approach contains some notable differences, which we hope will contribute to the robustness of this pedagogical innovation:

1. Rather than addressing a critical thinking and a disciplinary curriculum in the context of a single course, as Klebba and Hamilton do within the context of a Marketing class, we integrate three courses: One which explicitly addresses critical thinking and argumentation, one in Organizational Behaviour, and one in Leadership.
2. Our students are working professionals, who are an average age of 40 with a minimum of three years of managerial experience. Our classes therefore build towards a great degree of realism and complexity. By their end, students are expected to apply course concepts to a personal, real-world situation.

### **Case Study: An MBA Curriculum to Foster Critical Thinking**

#### **Context**

The MBA program in which our module is situated caters to mid-career students working in managerial positions. The program is delivered using a blended format: Students attend two three-week residencies, one at the beginning and one at the end of the 18-month program, and complete all other coursework via distance learning. It is a cohort- and team-based program. Students move through the program as a cohort and all classes require teamwork. The program is based on eight learning outcomes, of which Critical Thinking is one.

In 2012, a new course, Crafting and Communicating Effective Arguments (CCEA), was introduced to the beginning of the MBA to assist students in transitioning into the academic world. This course filled a gap in the curriculum, since as explained above, students require explicit instruction in critical thinking in order to master it, but previous to the introduction of CCEA it was not provided. The course was developed through consulting with faculty who teach at various points in the MBA program, to identify where students struggled and how this new course could best enable their success. Once the class's high-level goals were established, the

course designer worked closely with faculty responsible for courses taught concurrently with CCEA: Foundations of Strategic Leadership (FSL) and Managing Organizations through People (UOTP). The overarching objective of this consultation was to ensure that critical thinking, communication, and argumentation skills taught in CCEA directly supported their content. CCEA thus serves as an integrator, drawing on and using material from both FSL and UOTP. These courses were chosen to integrate with CCEA for three reasons (1) They are the first courses in the program and thus are offered at a point in time when students most need critical thinking development; (2) Students seem to particularly struggle to exhibit rigorous critical thinking when dealing with courses that deal with people issues and require them to use non-quantitative information to formulate their arguments; and (3) These courses are offered in an abridged time frame (5 weeks), thus requiring their instructors to address a lot of content in a short time, leaving little time left over for explicit instruction in critical thinking.

The three courses all take place in the first eight weeks of the MBA. As illustrated in Figure 1, all employ a combination of online and face-to-face learning. CCEA begins in an online pre-residency period and continues on campus. FSL and UOTP begin when the students arrive on campus and conclude in a post-residency on-line period.

Online Pre-Residency			Face-to-Face Residency			Online Post-Residency		
Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9
Crafting and Communicating Effective Arguments (CCEA)								
			Understanding Organizations Through People (UOTP)					
			Foundations of Strategic Leadership (FSL)					

Figure 1 – Sequence of Classes

***A Curriculum Designed to Incrementally Develop Critical Thinking Capacity***

FSL and UOTP both aim not simply to transmit to students content knowledge about Leadership or Organizational Behavior, but rather to help them grow as professionals by providing conceptual knowledge and tools that will enable them to change how they decide, act, manage, and lead in their roles as managers. For this reason, both classes culminate with a final paper which asks students to apply class concepts to their professional practice. From the perspective of Bloom’s taxonomy, the complexity of these final assignments can be explained as follows:

1. When students are asked to use their own professional experience as a case, they must create a coherent narrative from the messiness of life. In so doing, they must select an appropriate experience or topic to focus on, sift through multiple potential ways to frame and narrate it, and select salient details (without getting lost in detail), so that the instructor can understand the aspect of their professional experience they are addressing.

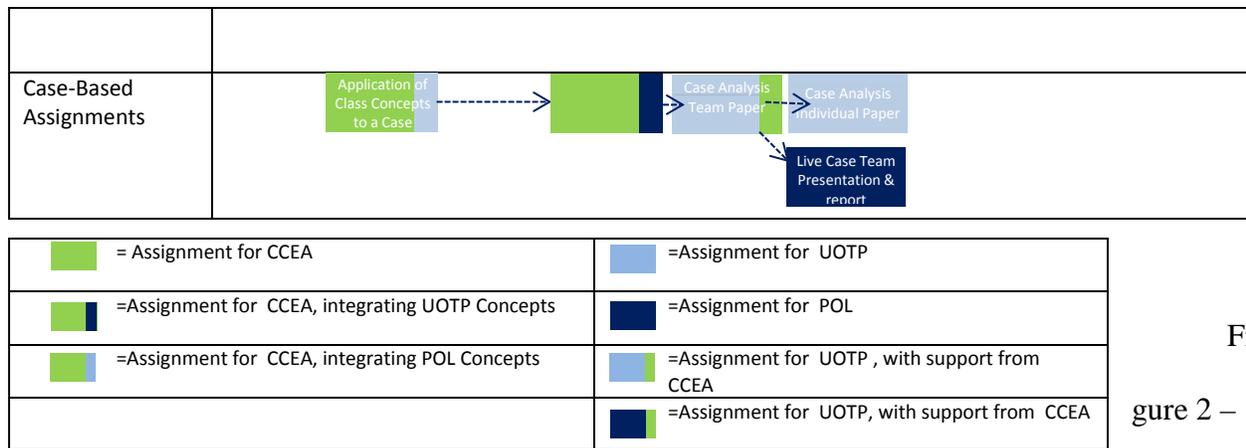
In other words, advanced *Synthesis* skills, defined as the ability to “build a structure or pattern from diverse elements” (Clark, 2010), are required.

2. Students are not directed to a predetermined class concepts or theories, but rather must decide independently which, out of all that have been covered throughout the course, are most relevant to the professional situation they have chosen.

Here, *Evaluation*, defined as “making judgments about the value of ideas or materials” (Clark, 2010) is needed.

To help students get to this point, CCEA, FSL and UOTP work together to incrementally build cognitive capacity, through scaffolding. Specifically, students begin their MBA with explicit instruction in critical thinking, including modules and readings on the principles of strong critical thinking, inductive and deductive argument, and critical reading. Students progress through their first weeks concurrently building capacity in (1) using their own life experience as fodder for analysis, which as explained above requires a complex act of synthesis and (2) honing their analytical, synthesis, and evaluation skills, using case analysis as the training ground. As illustrated in Figure 2 and explained in more detail in Appendix A, students begin by completing fairly straightforward tasks upfront. For example, a second-week assignment in CCEA asks students to use UOTP class theory to answer focused and directive questions about a case study, with an example of such a question being, “Referring to the Rokeach Value Survey, identify three values held by the case protagonist and provide evidence from the case for how you know this to be true.” Only two weeks later, after receiving feedback in this assignment, do students begin completing more comprehensive case analyses in CCEA, in which they receive less instructor direction.

	Online Pre-Residency			Face-to-Face Residency			Online Post-Residency		
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9
Experience-Based Assignments	You, as a Team Member				Leadership Vision				Leadership Portfolio Learning Implementation Plan



Integration of Classes

Figure 2 –

Figure 2 illustrates the degree of integration between the classes. As indicated, students’ first MBA assignments are for CCEA, where critical thinking concepts are specifically assessed and commented on. However, although there is a critical thinking focus to these first assignments, the material on which they draw comes from FSL and UOTP class content. For example, in Week 2, students complete a critical thinking focused assignment in CCEA by drawing on UOTP readings. The final assignment for CCEA is due in Week 4. CCEA’s focus then shifts into an explicit support role. For example, in CCEA students bring to class a draft of an upcoming UOTP assignment and complete a guided self-review to ensure they have adhered to principles of critical thinking. Students receive similar developmental support in approaching their final assignment for FSL. In short, CCEA explicitly scaffolds critical thinking instruction, gradually withdrawing support as students build capacity. Appendix A provides more detail about the nature of the various assignments involved in the module.

**Analysis and Discussion Observations and Future Directions**

While it is still too early to draw definitive conclusions, critical thinking capacity of MBA students appears to have improved since the introduction of CCEA, as evidenced by the perception of FSL and UOTP faculty. According to a UOTP faculty member, when compared to past years, students received higher grades particularly in their first two assignments, and demonstrated increased ability in using theoretical frameworks for the sake of analysis, supporting their views with sufficient relevant evidence, and writing coherently. In short, students demonstrated an increased ability to think critically, as defined by the authors at the start of this article as “the ability to construct cogent, coherent, and concise arguments in support of a specific course of action,” “applying subject-specific theories, concepts or frameworks towards the explication of personal and/or organizational issues,” “synthesizing complex and often interrelated information, “ and “articulating what should happen, why it should happen and ultimately how it should happen.”

That said, this apparent success cannot be viewed as unqualified. Clearly, the improvements noted in critical thinking are based on the observations and subjective assessment of instructors in the program. As such, the results are more indications of promise about teaching critical thinking rather than definitive results about the efficacy of the approach. Also, While assignments submitted by students while on campus seemed to notably improve, there appeared little change from past years in the final assignments, submitted at the end of the Week 8, once students had returned home and were working online. We speculate that this speaks to the degree of difficulty in thinking critically and the degree of focus required to do so well. When students were writing their first assignments while on campus, they were removed from professional and familial responsibilities and could focus entirely on their schoolwork. Once back at home and

work, schoolwork became one of multiple competing responsibilities. Indeed, the two weeks back at home and work after a three-week absence would likely be particularly busy.

~~Also~~Additionally, improvements to students' thinking might not be wholly attributable to the addition of CCEA, but rather to a broader domino effect catalyzed by its introduction.

Designing CCEA required many conversations between this paper's co-authors and led to minor changes in the other courses to better scaffold critical thinking. For example, in past years, the first case analysis assignment for UOTP simply asked students to conduct an analysis and come to a recommendation. Since the introduction of CCEA, the assignment instructions have been made more focused and directive, pointing students to which framework they should use to conduct their analysis. Another example of how the act of designing the integrated module led to stronger critical thinking instruction lies in the fact that, because of our collaboration, we were able to more precisely articulate to students the differing critical thinking expectations in FSL and UOTP, with the former focusing more on synthesis and the latter more on analysis.

Finally, it should be noted that successfully designing and teaching an integrated critical thinking curriculum of this type requires a very high degree of collegiality and extensive time dedicated to collaboration. The introduction of CCEA occurred after many years of discussion and collaborative work between the three faculty members and of prototyping different approaches. We entered into the integrated design process with a strong understanding of each other as teachers and a high degree of trust.

In conclusion, definitive results on the three-course module's impact on critical thinking remain inconclusive, and present an opportunity for further research. A more rigorous research design based on multi-year data, with a variety of instructors and testable hypotheses will enrich

understanding and practice about developing critical thinking abilities in MBA students. That said, the authors' experience suggest that adding explicit instruction on critical thinking to the front-end of an MBA program improves students' ability to demonstrate strong critical thinking in assignments, as does the use of cases, scaffolding, and integration across courses to create an integrated curriculum, with a high degree of faculty collaboration. It also suggests that using Bloom's Taxonomy and Klebba and Hamilton's Structured Case Analysis approach as foundational frameworks for an integrated curriculum appears to offer a promising direction.

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### Appendix A. Progression of Assignments, with Assignment Details

	Course	Assignment	Brief Description	Associated Class Activities	Stage of Cognitive Development	How Builds on Previous Assignment
Experience-Based Assignments	BUSA 502	You as a Team Member	Learners craft an argument indicating why they will be good team members	Readings and lectures to foster knowledge and comprehension of principles of argumentation	Application	N/A
	BUSA 508	Leadership Vision	Students draw on class readings to articulate a leadership vision	Class discussion and readings	Analysis	Students must choose from a range of articles to articulate a personal vision. They do not need to recommend action at this point.
	BUSA 514	Learning Implementati	Students review what they have learned during	All activities during the course with strong	Evaluation	Students must choose from a wider range of

		on Plan	the course, select and describe three (one identified for them) most relevant topics to their work lives, and articulate a plan for transferring their learning to the work place	reliance on personal reflections written at the end of each class in the course. These reflection periods are built into the class design.		concepts and articles (all concepts presented in class) and apply to real world experience
	BUSA 508	Leadership Portfolio	Students draw on class readings to identify action steps to achieving their leadership vision.	All activities during the course.		
Case-Based Assignments	BUSA502	Application of Course Concepts to a Case	Students apply concepts from BUSA514 to a case study, by answering focused and directive questions, for example, "Referring to the Rokeach Value Survey, identify three values held by the case protagonist and provide evidence for how you know this to be true"	Readings and lectures on active reading and on the application of theoretical concepts to a case	Application	N/A
	BUSA502	Case analysis and recommendation: Team Paper	Using the same case as was used in the previous assignment, students use an article from BUSA508 to conduct an analysis and come to recommendations. Instructions are still fairly directive, but less so than in the previous assignment.	Teams present their analysis and recommendation before writing the team paper. All teams receive on-the-spot feedback on their critical thinking from the instructor after presenting. By the end of the class, students often are able to provide feedback to each other that is on par with that provided by the instructor, thus assimilating the principles of good critical thinking.	Synthesis (with emphasis on analysis)	Students use the same case as analyzed in the previous assignment but now:  -Apply different theory, thus demonstrating how using a different conceptual lens will impact analysis. -Make recommendations
	BUSA 514	Case Analysis	Explain an ethical problem and suggest an action – students are required to use a specified analytical framework and respond to two specific questions	Readings and class discussion to clarify content	Synthesis (with emphasis on application)	Students use a specific framework to analyze a case and make recommendations

	BUSA 514	Case Analysis	Explain an organizational problem and suggest an action – students are directed to rely on two specific course content areas in responding to two questions that are more vague than their previous assignment	Readings and class discussion to clarify content Classroom case activity to illustrate key argumentation requirements	Synthesis (with emphasis on analysis)	Students analyze a case and make recommendations, but are not pointed to which specific class concepts to utilize
	BUSA 508	Live Case Team Presentation and Report	Students use class concepts to analyze a “live case,” presented by an organizational leader, to whom they make recommendations	Class discussion and readings.	Synthesis	Students must make sense of the situation presented by a live case host in order to conduct analysis and come to recommendations.



Title: The Alternative Learning Center: A Social/Emotional Approach to Academic Excellence Without Sacrificing Rigor

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## **Alternative Learning Center Abstract Oceanside Unified School District Fall, 2013**

**History:** In the spring of 2012, Barry Tyler and Barbara Perez attended a conference for continuation students. During one of the sessions, an educator from Riverside County, California presented a program they implemented to service students who would have normally been expelled from the district within the district. This session sparked a series of conversations regarding current practice in the Oceanside Unified School District. The reality at the time was that students who were recommended for expulsion were sent outside the district to a local court school to receive their educational services. This practice had negative implications on several levels; expelled students often failed to fulfill their conditions to return (anger management, gang diversion, community service, etc.). In addition, because expelled students were not enrolled in the Oceanside Unified School District, the district did not monitor their progress toward meeting those requirements. Lastly, the financial implications of having expelled students serviced outside the district were substantial. During the 2010–2011 school year, the district expelled 71 students from the district at a loss in ADA of \$185,000.00. For 2011–2012, there were 48 expelled students with losses totaling \$125,000.00. After some initial investigation, data collection and collaborative conversation, the motto of what would become the Alternative Learning Center was born: *Serving Our Students First*.

Once the initial concept was put into place, the possibilities for serving students in a non-traditional setting became endless. What about students with social phobia or anxiety who were traditionally assigned to home hospital or non-public school? What about students who simply didn't attend school at all? What about students who present a safety concern? What about students who aren't at risk at all, but who simply want to study utilizing an online format? As we started talking about the possibilities, it became clear that we wanted to create an alternative for these students that simply did not exist within the district. Though the district had implemented an independent study program on the comprehensive high school campuses, the concept of the Alternative Learning Center was to go beyond attending to the individual student's academic needs; by adopting a holistic approach, the ALC attends to the social/emotional needs of the students and their families by incorporating both individual and group counseling via community agencies and therapists. Quite simply put, this is not just another online learning program. The Alternative Learning Center takes a social/emotional approach to academic excellence without sacrificing rigor.

In the fall of 2012, Barry Tyler and Barbara Perez proposed an online/independent study pilot program designed to meet the needs of 21<sup>st</sup> Century Learners from a variety of backgrounds and circumstances to the Oceanside Unified School District. The Alternative Learning Center was embraced by the Oceanside Unified School District's Superintendent and Board of Trustees and opened on January 28<sup>th</sup>, 2013 with two instructional afternoon blocks, two teachers, two students and one administrator. During the semester, the program grew to include nearly 50 students who earned more than 500 credits and logged more than 2000 attendance hours – a significant statistic given the fact that most of these students were not earning credits or attending school during the previous semester.

The abstract below details the initial proposal which was submitted to the Oceanside Unified School District's Superintendent, Cabinet and Board of Trustees.

**Background:** Many school districts offer different variations of alternative learning centers in an effort to meet the diverse needs of 21<sup>st</sup> Century Learners. Today's learners often require alternatives to the traditional school setting; these variations include multiple learning modalities and schedules as well as independent, online and accelerated learning opportunities. In addition, there is a significant need to serve at-risk students who are often not successful in the traditional educational setting. These students are susceptible to being suspended or expelled; in addition, they often struggle with attendance and/or social/emotional issues. Economic concerns, scheduling conflicts, transportation difficulties and childcare needs are among the daunting issues that interfere with students participating in a traditional school system and schedule. Left unaddressed, these students become part of our at-risk population and increase the district's dropout rate. Families rely on district support to ensure their children's success. In addition to providing an alternative educational setting, the Alternative Learning Center seeks to provide families with community agency support as well as family outreach and education opportunities. How much better for our district to offer these comprehensive services in the Alternative Learning Center?

The creation of an Alternative Learning Center would specifically address these needs allowing students to be served within the district rather than looking to outside districts, charter schools, private schools and online programs for alternative learning experiences that better meet their individual needs.

#### **Alternative Learning Center Format:**

Located on the Ocean Shores (Continuation) Campus during the initial pilot phase, the Alternative Learning Center includes a computer lab and adjoining classroom. Designed to operate between the hours of 1:00 p.m. and 5:00 p.m., the Center provides an opportunity for students to create an individual schedule which best fits their needs. They are able to complete high school graduation requirements and receive a diploma from their home schools using an online independent study format.

#### **Students Who Will Benefit from Attending the Alternative Learning Center:**

**Home Hospital** – Many of our current home hospital students could successfully access the Alternative Learning Center for their educational needs. In the current system, each student is assigned one hour per day, five days a week. With the Alternative Learning Center model, one home hospital teacher will service multiple home hospital students using the small group, individualized instructional model, at a substantial savings to the district. By providing a "home base" for the home hospital teachers at the Alternative Learning Center, they will have a centralized location to meet with parents and students instead of at the students' houses, a library or community center. Moreover, home hospital teachers will have immediate access to the student information system, AERIES, in order to review demographic data, transcripts, grades, test scores and interventions. In addition, being housed at the Alternative Learning Center also gives students access to district curriculum programs such as Read 180 and Mind Institute. With these resources, the home hospital teacher is better able to create an individualized academic plan for each student which significantly increases their ability to continue to earn credits toward graduation while they are unable to participate in the traditional program.

**Special Education Students** – Many special education students experience circumstances that make it difficult to function on a comprehensive high school campus (anxiety, social phobia, etc.). Presently, students who need an alternative experience are referred to day treatment (in the most extreme cases), home hospital or non public school. Often, what these students need is an alternative to the traditional schedule and could be successful in the Alternative Learning Center with appropriate support.

**SARB** – Students who are placed on a SARB contract regarding inconsistent or non-existent attendance could access the Alternative Learning Center as an intervention or alternative to the traditional school setting and schedule. Students in this situation have already demonstrated that they are unwilling or unable to attend a regular schedule for a variety of reasons. By attending the Alternative Learning Center, the student can continue to progress toward completing their graduation requirements by adhering to an individualized schedule that addresses the hardships or obstacles that have negatively impacted their daily attendance.

**Administrative Transfers** – Several factors have the potential to necessitate an administrative transfer. In these cases, the Principal may consider moving the student to the Alternative Learning Center as a means of preserving the campus culture and maintaining a safe school environment.

**Students at Risk of Being Expelled** – Students who have reached 10 days of suspension and have not responded to traditional progressive discipline procedures or interventions would be eligible to attend the Alternative Learning Center. At the recommendation of the administrators throughout the district, the Alternative Learning Center would represent an additional intervention with the intent of changing the behavior that led to multiple suspension days.

**Expelled Students** – In an effort to decrease the number of expulsions per school year and to maintain and manage students who have been expelled, students who are granted a suspended enforcement of an expulsion would be eligible to attend the Alternative Learning Center. This would be decided on a case by case basis as determined by district administrators who would then submit a list of eligible names to the Board.

In addition, one of the challenging issues for expelled students is meeting the conditions listed in their Rehabilitation Plan which is necessary for their return to the district. These often include drug and alcohol counseling, anger management, decision making and community service. In partnership with Interfaith, AWARE and other community outreach programs available to OUSD, suspended enforcement of expulsion students could receive these services at no additional cost to the district. By implementing the ALC, OUSD assists students in meeting the rehabilitation conditions outlined in their expulsion order.

**On-line Learners** – In an effort to support the 21<sup>st</sup> Century Learner, the creation of a virtual school gives students an opportunity to access the curriculum in a rigorous and relevant learning environment while supporting the digital native in college and career readiness. Access is available 24 hours a day, 7 days a week and utilizes the same course outlines as students in the traditional setting. Courses are taught by credentialed teachers and are A-G and NCAA compliant. On-line learning allows flexibility as well as acceleration opportunities for students.

## **Benefits of Piloting the Alternative Learning Center**

- Small group individualized instruction
- Social interaction
- Alternative to NPS for special education students needing 45 day placement
- Centralized location with access to student information system (AERIES)
- Recover lost ADA
- Maintain positive campus culture; increase campus safety
- Facilitating and managing intervention/rehabilitation plan
- Connecting students and families with community resources
- Alternative to traditional intervention
- Serving students who desire acceleration
- Access to 21<sup>st</sup> Century Learning
- Flexible scheduling for students with careers/special interests
- A-G and NCAA compliant
- No initial start up costs to the district; cost neutral program
- Streamline individual learning experiences to support diverse educational needs
- Increase graduation rate; decrease dropout rate
- Serving the needs of our students within the district
- ALC is OUSD's commitment to meet the needs of the 21<sup>st</sup> Century Learner
- Providing resources, training and parenting courses for families of students being educated in an alternative setting

## **Summary:**

OUSD has a unique opportunity to streamline individual learning experiences for students by creating an Alternative Learning Center to support their diverse educational needs. In developing and implementing this program, we are able to provide additional options for individual students. Creating and facilitating these services minimizes students' and parents' desire to leave the district.

One year ago, our district was faced with a charter application from a group of parents who did not think that our district provided the programs or learning experiences they wanted for their children. Though the effort was not successful, our Superintendent talked to his Leadership Team about his commitment to hear what the community wanted and to create programs to fulfill those requests. The Alternative Learning Center is a prime example of the Oceanside Unified School District's commitment to recognize, address and support the educational shift necessary to create rigorous and relevant learning opportunities which meet the needs of the 21<sup>st</sup> Century Learner as they become college and career ready.

For the 2012- 2013 school year, Ms. Perez and Mr. Tyler propose implementing and piloting the Alternative Learning Center starting second semester. During this pilot phase, the focus will be on servicing a cohort of students including home hospital, special education and those with behavior and attendance concerns. Our goal will be to evaluate practices and procedures for managing the ALC, identify best instructional practices, and establish community agency relationships. Additionally, we will be researching the viability of piloting an on-line/virtual school in a summer school session to lay the foundation for a future on-line/virtual school.

### **Status Report as of Fall 2013:**

This fall, the ALC has expanded to include blocks throughout the instructional day. Staffing includes: three teachers, two aides, and one administrator. Currently, there are 50 students enrolled, with additional students being added almost daily since the district's six week grading period ended.

As of fall, 2013, during the first 6 weeks of school, we had 40 students enrolled who have earned 180 credits and logged over 1600 attendance hours in the program. Additionally, we have augmented the social/emotional component of the program; Palomar Family Counseling (a local agency) has started both individual and group sessions. Group sessions include: social skills, anger management, decision making, substance abuse and gang awareness. Additionally, students and families are being referred to outside agencies for individual and family sessions based on discovery conversations from the on-campus meetings.

### **Conclusion:**

The Alternative Learning Center has been developed with the understanding that not all students can be successful in a traditional school setting. To address this need, districts, charter schools and independent companies have tried to implement online and virtual programs. The Alternative Learning Center is not just another online learning/independent study program. The Alternative Learning Center takes a social/emotional approach to ensuring academic excellence – without sacrificing rigor.

**PORTAL: The Doorway to Twenty-first Century Discourse**

Hawaii International Conference on Education  
January 5-8, 2014  
Paper Session Submission  
Educational Foundations  
Paper Session

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## TODAY'S TRIVIUM, TAKE ONE: ZERO-G

From the weighty comfort of my theater seat I recently experienced the euphoria- and fear-inducing weightlessness of Alfonso Cuarón's film *Gravity*. I also recognized this as a kairotic moment in my life as an English/language arts teacher, a moment in which to address the drifting issue of grammar instruction as I see it from the secondary language arts classroom. Immersed as I have been in a current-traditional world where I have always believed that grammar instruction has kept me and my students anchored, I was finally free, in that theater, to imagine life in "Zero-G," a world without grammar instruction to weigh it down.

Like gravity, grammar has always been a comforting constant for me. I have long understood its systems and variables. But for a generation or more of American young people, the experience of "Zero-G" is actually the status quo. Within today's enlightened educational state, explain researchers, grammar should be gone. A parade of analyses and meta-analyses by Harris (1962), Braddock (1963), Elley (1976), Hillocks (1984), and Hartwell (1985), have only served to reinforce the insufficiency of instruction for the control group: grammar, as it has often been taught in the classroom, has done no good. In fact, say Harris and Braddock, it has actually been "harmful."

For decades, researchers have been fanning these "winds of change," as Maxine Hairston famously called them, seeking a new direction for writing instruction. In their eyes, secondary writing textbooks must focus on student-centered, process-based instruction and must abandon the useless and time-consuming practices of grammar drilling and sentence diagramming. Furthermore, influential (and agenda-setting) NCTE publications come close to disregarding grammar instruction altogether. Researcher Martha Kolln notes a SLATE Starter Sheet designed by grammar guru Constance Weaver to disseminate the NCTE's official position on grammar (National). The prominent quote affixed to the top is from George Hillocks's "definitive" research and declares that the "teaching of school grammar has little or no effect on students." According to composition scholar James D. Williams, the teaching of grammar

throughout history has been an abject failure. He writes that “[d]espite all the concern and attention devoted to it, grammar has not had any positive effect on writing performance” (314). One would anticipate, then, that a shift away from traditional grammar instruction would have a markedly positive effect on student writing performance, but on September 26, 2013, the College Board, one US gatekeeper tasked with anticipating and assessing levels of college success, announced that Houston--as well as the rest of the country--may have a problem: only 43 percent of SAT takers in the class of 2013 graduated from high school academically prepared for the rigors of college-level course work” (“Stagnant”), and their performance on the writing portion was the worst of the test’s three components. Theorists will likely be quick to complain that secondary teachers simply aren’t following the research and are still teaching traditional grammar. Yet recent studies indicate that this really isn’t the case.

#### A RATIONALE FOR A SECOND LOOK

According to Hudson and Walmsley (2005) and Kolln and Hancock (2005), students in English-speaking countries have long lived in a “Zero-G” world. The pair of historical analyses by these authors describes the shift away from explicit grammar instruction in Great Britain and the United States. Yet while the British pair Hudson and Walmsley report trends of grammar revival, Kolln and Hancock are still awaiting similar changes in the US.

According to the most recent meta-analysis that builds on Hillocks’s previous work, Graham and Perin (2007) give practitioners little reason to change their drifting ways. The portrait that emerges is one of failed grammar instruction and stranded students. Yet Graham and Perin make an interesting disclaimer. They write that “[f]indings regarding grammar instruction must be interpreted cautiously, because the grammar treatment was the control condition for all but one of the obtained effect sizes” (462). In other words, for most historical studies of grammar-teaching effectiveness, grammar was the status quo in the particular classrooms under close study, but today we live and learn in a different world. Grammar historians declare to us that an entire generation has been grammar free. Hudson and

Walmsley pass on findings from 1998 that “younger teachers had generally not been taught grammar explicitly as part of their own education” and Kolln and Hancock explain that many teachers in both countries would be “happy to go on record as knowing nothing whatsoever about the grammar of their native language” (21).

Today, grammar is rarely taught systematically. This makes recent studies within Graham and Perin’s scholarship stand out, since the tables are now turned. In other words, the experimental variables (teaching grammar only in context or using only process-based writing) have today become the control treatments. Grammar minimalism within process writing is firmly entrenched within almost every writing classroom in the United States (Lacina and Block 12). This makes recent statistics regarding student progress as writers all the more alarming, since a process approach was supposed to address these problems. In England, similar trends have sparked a revived government mandate for grammar instruction, and the momentum for change in the United States is building as well.

#### DEFYING GRAVITY

From these developments, it is clear that the gravity of grammar is pulling whether we believe it is or not. Unfortunately, for students in secondary education, the effect is dizzying. Official mouthpieces, including teachers and school systems, condemn grammar instruction even as communities demand it. Even classroom textbooks, composed to create company profits, seem to offer grammar as a valid subject for consideration, but in the hands of inexperienced teachers this mixed message will usually produce negative results.

It is true that many textbooks continue to present grammar as a natural feature within the classroom. Over the past two decades, grammar instruction has even been integrated within literature texts, pulling examples from the context of literary models. Unfortunately, this does not mean that teachers have been equipped to use those examples or that teachers themselves have positive attitudes about grammar learning to pass on to their students. In fact, teachers have been able to cast off the teaching of grammar entirely if state standards haven’t specified

it. Essentially, secondary schools have long been speaking out of both sides of their curricula, and theorists haven't been all that helpful as referees, either. Some seem almost ready to blame teachers for beating the dead horse by teaching grammar with discredited methods. It is teachers, then, who must change or be changed. Yet this position betrays two false assumptions.

First, it is not true that, just because grammar-teaching materials can be found in textbooks, the teacher is actually using them. I would venture to guess that most teachers are actually happy to ignore those prompts and feel justified in doing so. Second, teachers have no reason to know any better. Theorists, within their sphere of influence at the university level, have failed to communicate to state legislators and secondary teachers the relationships between rhetoric and composition in general, and among language, logic, and learning in particular. Even though theorists themselves acknowledge the importance of grammar as a topic (always paying homage to Chomsky), they have failed to pass on the weight of this discussion to teachers and their students.

#### THE GRAVITY OF GRAMMAR: WHY IT MATTERS

The silence of mission control at this critical time has been deafening. It is time for theorists, researchers, legislators, administrators, and teachers to stand together, ready to cultivate with students an understanding that grammar learning has practical uses that reach beyond conventional wisdom of "error correction" and "writing improvement." Hudson and Walmsley itemize the following specific benefits. Grammar learning, they say, expands grammatical competence by introducing young students to patterns that do not appear naturally in the discourse of children; establishes a shared metalanguage for talking about language; supports the learning of other, non-native languages; develops critical thinking skills; develops investigative skills; fosters an appreciation of students' own minds; and helps students develop strategies to critically respond to the ways language is used.

#### THE LANGUAGE OF GRAMMAR: A COMMON CORE

Perhaps most compelling is the identification by Hudson and Walmsley of grammar as “metalanguage.” It is a system--albeit a coded system--by which teachers are able to support writers. With the relatively recent adoption of specific state standards, and now through the Common Core State Standards Initiative, the terms of engagement have been codified, for better or for worse. According to new Common Core standards, students in forty-six states are going to learn grammar again. Unfortunately, many teachers will be playing catch up as they struggle to re-learn terms that have fallen out of our national conversation.

Yet a set of standards alone will never be enough for students to experience the gravity of grammar in a healthy, affirming way. An understanding of language will not be communicated through the Common Core’s list of language targets alone: teachers must be carefully trained so that the debris of past disasters does not come crashing down upon them and their students. Already the backlash against the Common Core is beginning, and I am reminded of a certain orbiting field of debris that will most likely always be lingering as Americans bristle at any suggestion of a pedagogical yoke imposed by those who are far removed from the classroom. The question, then, is how we can best assist students as the country re-enters the study of grammar, a harrowing process not far removed from the odyssey of *Gravity’s* Dr. Ryan Stone, especially considering the chasm between public perceptions of grammar and the desire of theorists to help students move beyond rote learning and error correction.

#### TOWARD A SUCCESSFUL RE-ENTRY

Re-entry is a fiery circumstance, especially as state and national politics begin to heat up. In the midst of the defunding and backtracking of school systems balking at wide-scale reform, students are left in the care of individual teachers who have the power of affect. Yet these teachers, too, are embroiled in a fiery descent of their own--and by descent, I am not suggesting that the teaching of grammar is backsliding. Care must be taken by all involved at mission control to ensure a smooth transition from a Zero G environment to one in which

grammar is vibrantly and enthusiastically studied as a part of metalinguistic discourse and the scientific method. To accomplish this, several features must obtain.

First, universities must improve teacher training regarding the study of language. Of course, this goes against the current grain by which teacher credentialing must be a streamlined business that quickly connects teachers with the classrooms that need them so desperately. A compromise would be to provide mandatory support for teachers who are not fluent in grammatical principles and teaching methods. Second, those teachers who have been trained in traditional grammar must be redirected toward research-based pedagogies. Teachers must be trained to help students focus on patterns and functions within a larger context instead of referring students to arbitrary “rules.” This does not mean that grammatical patterns are never drilled. Sufficient practice will always be a key to the internalization and naturalization of grammatical concepts.

Finally, administrators and textbook publishers must begin to turn their full attention toward research-based strategies that work. In other words, they must put their money where the research is and teach sentence combining, which “involves teaching students to construct more complex and sophisticated sentences through exercises in which two or more basic sentences are combined into a single sentence” (Graham and Perin 462). Of the grammar-teaching strategies noted by Graham and Perin, sentence combining wins the day as having had “a moderate impact on the quality of students’ writing” (462)--and yet, few texts have dedicated portions to sentence combining practice, probably because of the devaluation of any form of grammar teaching over the past three decades. It is absolutely time for textbook companies--led by the “Big Three” of Houghton-Mifflin Harcourt, McGraw-Hill, and Pearson--to focus squarely on this type of proven pedagogy.

In twenty-first century writing textbooks, sentence combining has been almost absent, except in William Strong’s Glencoe *Writer’s Choice* series (1996), now virtually out of print. Interestingly enough, both Strong, a sentence combining guru, and student- and process-

centered scholar James Kinneavy collaborated on texts that had a sizable traditional grammar portion (Beason 274). Was this merely a marriage of corporate convenience, or can research-based theories of composition and renewed pushes for grammar instruction learn to co-exist and complement one another?

#### CHANGES IN TEXTBOOK TRAJECTORY: COMING IN TOO HOT?

Textbook developers must go farther than merely providing exercises and helpful tips. They must decide it is valuable to foster the intellectual tools of the trivium--grammar, logic, and rhetoric--in teachers and students instead of leaving them for scholars to sort out. This means that school districts and states must demand a different kind of textbook.

It is true that textbooks *are* changing, but it seems that demand for texts with student appeal and technological innovations is driving the market. Contrary to conventional wisdom, teachers and students do not necessarily need a profusion of graphics and images when we are trying to get at the heart of language. In addition, secondary teachers rarely use a separate writing text. Instead, they often rely on a combined literature/composition text. One necessary development may be the reduction of literature selections in common anthologies combined with increased emphasis on the foundations in rhetoric, logic, and grammar. Textbook companies have made strides in recent years. Houghton-Mifflin Harcourt has begun to use a rhetorically-minded 6+1 Trait model for composition. McGraw-Hill (Glencoe) has created a *Writer's Workspace* that gives students command of the writing process online, while Pearson has launched their *Writing Coach Online* toward similar ends.

Still, technology should be a tool, not a rabbit trail down a dazzling yet distracting rabbit hole. One can only imagine what LA school teachers were forced to do after reclaiming district-issued iPads once they discovered students had learned to crack their security.

Even better than new bells and whistles, school districts have begun to launch textbook-independent programs so that teachers will learn systems that can be applied flexibly across the curriculum (Davis). The potential for curricular development is unlimited, and it has the Big

Three scrambling to keep up. The multi-modal Shurley Method is one such research-driven pedagogy that Graham and Perin mention as a means for helping students re-enter the elementary and secondary grammar classroom (472). Already there are independent publishers who are responding innovatively to the prospects of the Common Core's impact, such as the *Grammar Gallery*, a web-based grammar program light-years beyond the dusty grammar tomes of ages past.

At heart, sound pedagogical principles and clear communication of concepts both to teachers and to students should determine the resources we use in our schools, and it is the heart for bridging these kinds of gaps that teachers most need if they want to help students re-enter the High-G world through a sometimes hostile and confusing academic atmosphere.

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Improving some of Reading skills to students with  
Mild Intellectual Disability using Web 2,0

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# Improving some of Reading skills to students with Mild Intellectual Disability using Web 2,0

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## **Abstract**

The purpose of this study was to evaluate the effectiveness of using streaming the web 2,0 to improve, maintain, and generalize Improving some of Reading skills of ten students (12-15 years old) diagnosed with intellectual disabilities. A pre-experimental design was used to evaluate the effectiveness of a web 2,0 multimedia program. Instruction consisted of supported viewing and imitation of Reading skills videos available online, with students searching for a video of the desired skill, viewing it, and then imitating the video's sequence of steps to complete the task. Results were assessed by means of a questionnaire administered to each participant's primary caregivers, and indicated that the structured use of the websites was effective in improving Reading skills. Implications and suggestions for future research are also discussed.

**Key words: Reading skills, intellectual disabilities, websites, web2,0.**

## Utilizing peer instruction to teach educational integrity: Student learning outcomes

The objective of the current research was to examine the instructional effectiveness of a peer instruction intervention in an attempt to develop an economical and effective institutional method of promoting educational integrity. In this study, residence dons provided a brief presentation on educational integrity to residence students. The study utilized a pre-test post-test design to assess the impact of the instructional intervention. The pre-test survey inquired about students' demographic information and their perceived knowledge and confidence of four distinct components of educational integrity: definition of educational integrity, detection of misconduct, consequences of misconduct and the importance of educational integrity. The pre-test survey also inquired about students' personal importance of academic integrity. The post-test survey assessed the impact of the peer instruction on students' perceptions of their knowledge, confidence and personal importance of academic integrity. In addition, in the post-test survey, students rated the quality of the PowerPoint presentation (informative, clear, helpful, etc.) as well as its impact on helping them make safer choices in the future. The results revealed that students perceived having made gains in knowledge and confidence in all four topics of educational integrity covered in the presentation. On average, students also reported that participating in the presentation increased their personal importance of academic integrity. Additionally, a linear regression revealed that four variables significantly predicted students' perceptions of the effectiveness of the educational integrity presentation. These variables include 1) students' personal importance of educational integrity measured at post-test, 2) students' confidence about educational integrity measured at post-test, 3) the presentation was informative, and 4) the presentation helped students to make safer choices in the future.

An Experimental Study on the Semantic Correlation Effects Between  
Words and Illustrations in Elementary Chinese Textbooks

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**Abstract:** The current study examined the semantic correlation effects (SCE) between words and illustrations in elementary Chinese textbooks. SCE refers to the degree of consistency between two semantic variables. The study hypothesized SCE between words and illustrations affected students' understanding of text content and enhance learning efficiency. 142 students from third and fifth grades in an elementary school in China participated in this study. Results affirmed the hypothesis. Stronger SCE correlated with higher level of reading comprehension and vice versa. These illustrations, therefore, were shown to play an important role in promoting understanding of knowledge in elementary grades.

**Keywords:** elementary Chinese; textbook illustrations; semantic correlation

# On Creating the Center for Positive Behavior Support in China

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## **Abstract**

This study examines the academic, administrative, and social issues relating to the creation of a center for positive behavior support (PBS) in People's Republic of China. It identifies the major mental health problems among primary and secondary school students and how PBS can be an effective strategy in tackling many of these problems. It provides a detailed description of the theoretical foundation and practical application of PBS. It anticipates the administrative challenges at multiple institutional and governmental levels and offers a number of recommendations on how PBS can be implemented in a socially acceptable way. The paper also states credentials of the key participating personnel and institutions. Results of the study will effect the founding a PBS center with potential to affect many lives in China.

**Keywords:** Positive Behavior Support, Mental Health, Primary and Secondary education

# Web Based Teaching of Foreign Languages

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**Abstract.** The Web based distance education can be analyzed by using UML diagrams. UML diagrams can describe the Web teaching content and the Web teaching delivery. Describing the online teaching process using UML modeling can also help finding relationships between the teaching material and its delivery method.

**Keywords:** UML, Distance Learning, Web Based Learning, Teaching Foreign Languages.

## 1 Introduction

There is a significant evolution of distance education as reflected in the literature [7, 10, 12]. All of the distance education types include physical separation of an instructor and students [7]. That characteristic determines the distance education basic advantages and challenges. Among advantages the most often mentioned are [11] (a) institutions can offer courses with very low enrollment (b) classes can be offered in institutions with no qualified instructors available on campus (c) more graphical method of delivery can be used. The challenges are related to (a) limited social and academic relations between students from remote sites and the instructor, (b) harder to enforce central role of the instructor, and (c) heavy dependence on equipment i.e. computer or ITV and their problems [14].

The distance education and especially Web based teaching can be enhanced by using semantic models [1, 5, 6]. For example, UML state diagrams can be used to describe the delivery components and the delivery process. Describing the online teaching process using UML modeling can help finding relationships between the teaching material and its delivery method. In this paper we describe experiments leading to improvement of online courses for teaching foreign languages.

## **2 Types of Distance Education**

The Distance education can be classified using different criteria. The main classification criterion is the type of communication between an instructor and a student, and between students themselves [7]. Generally the communication can be two-way or one-way. The types of available two-way communication used in the distance education are divided into two groups: asynchronous and synchronous. Asynchronous two-way communication is a mode of delivery where participants access course materials and communicate with instructor on their own schedule. Instructor and students are not required to be together at the same time. One of the historically first asynchronous two-way communications between an instructor and a student was a regular mail correspondence. That type of communication provided the slowest feedback and therefore was very similar to self-education. With the development of new communication technologies such as Computer networking, and course management systems e.g. Blackboard [9], the feedback was significantly improved.

Synchronous (real-time) two-way communication is a mode of delivery where all participants are "present" at the same time. Typical synchronous two-way communication categories are video conferencing and Web conferencing. Video conferencing became the foundation of ITV distance education and Web conferencing became the foundation for synchronous Web based (online) distance education.

One-way communication takes place when the content is delivered via radio or television. This type of distance learning is referred to as Broadcasting or Tele-courses. The special type of one-way communication is computer based when the content is stored typically on CD-ROM or DVD and delivered by a computer. The student interacts with a computer instead of instructor. The computer, however, executes the program prepared previously by an instructor.

The distance education can employ several categories of communication for the same course. Then it is generally referred as hybrid distance education. The most widely implemented hybrid distance education is hybrid online instruction where the integration of live, in-group instruction with asynchronous online instruction takes place.

## **3 Diagrams and Types of Distance Education**

The Unified Modeling Language (UML) is used typically for visualizing, specifying, constructing, and documenting the artifacts of software-intensive systems [1, 5]. Generally, we can use the UML to capture classifications that constitute the basic knowledge about a variety of subjects. For that reason, UML models can be very important for the educational process, since they can provide systematic description of educational materials and their delivery [8, 15, 16, 17, 18, 19]. These diagrams will reflect classifications based on a subclass hierarchy, an aggregation hierarchy, named association relationships, or any combination of these. Such classifications can be used to develop a deeper understanding of the subject area for instructors. In addition, other UML models can describe the learning process itself, which should allow

instructors to prepare better presentations about the subject, including Web presentations.

The UML modeling is object oriented, meaning that whatever system is being modeled, its components become abstract objects that can have some properties (also called attributes) and functions (also referred to as responsibilities). A class is a collection of these abstract objects with the same attributes and functions.

Class diagrams contain classes and relationships between them. Classes are graphically represented as boxes. Lines or arrows are then drawn between classes to describe their relationships, the most common of which are aggregation, generalization, and named association. The aggregation relationship corresponds to a link between classes that can be described by natural language phrases such as: consists of, has part, and is part of. For example the phrase “Material segment consists of rules, templates and examples” contains aggregation relationship and is graphically represented in Fig. 1a.

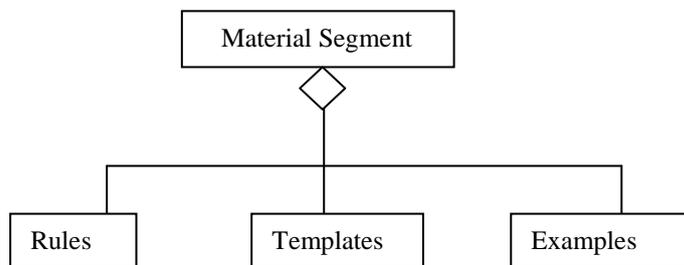


Fig.1a. An example of an aggregation relationship

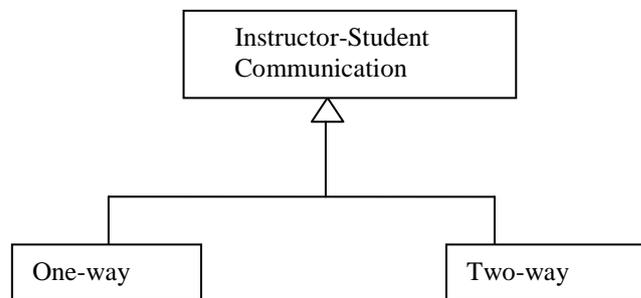


Figure 1b. An example of a subclass relationship for Instructor-Student Communication

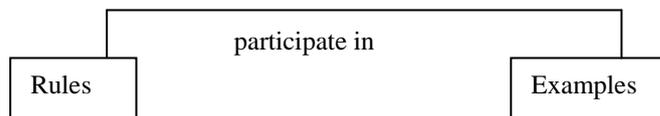


Figure 1c. An example of a named association relationship

The subclass relationship corresponds to a link between classes that can be described by natural language phrases such as: has subtype, has category, and is a. For example “Instructor-Student communication has two categories one-way and two-way communication” contains the subclass relationship and is graphically represented in Fig. 1b. The named association corresponds to a link between classes that can be described by other natural language phrases such as: buy, owns, etc. For example the phrase “Rules participate in examples” contains the named association and is graphically represented as a line with the label as shown in Fig.1c. These different relationships use different graphical symbols as shown in Fig. 1.

We can expand modeling different types of communication used in distance education as shown Fig. 2. It is a graphical representation of discussion carried out in Section 2.

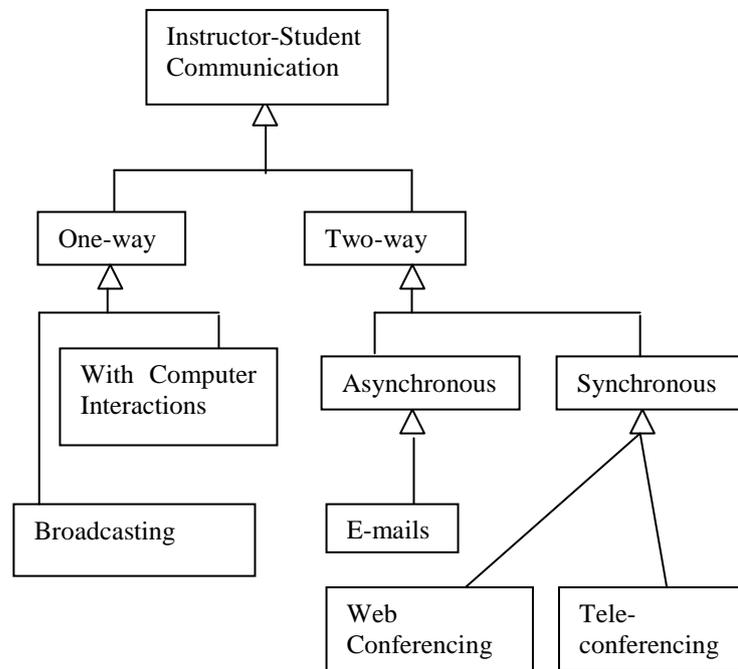


Fig. 2. Classification of Instructor-Student Communication in Distance Learning.

Based on types of communication we can define various types of distance learning including hybrid distance education. Hybrid distance education can be based on integration different types of communication including traditional education with direct contact between an instructor and a student. Typically it refers to a combination of traditional and asynchronous online education but in general can be based on different combinations.

## 4 UML models for distance education of foreign languages

The distance education program has its special importance for smaller rural universities. For example, there is a need to implement distance education at Edinboro University of Pennsylvania and its sister institutions. The foreign languages instruction at Edinboro University includes Spanish and Russian. There are enough students of Spanish language to offer of various courses in a traditional classroom. However, in the case of Russian population of students very small and course offering is limited. Distance education is a useful medium for delivering of instruction to students at different sites [20, 21, 22, 23, 24]

The distance education requires very careful preparation of educational materials and their method of delivery. There are many methods of teaching foreign languages and they can be classified in a variety of ways [2, 3, 13]. For our work the most useful is a classification based on the role of the grammar [4]. Some methods emphasize the importance of understanding grammar, e.g. the Grammar Translation Method [4]. Other methods, e.g. the Series Method, teach students without translation and conceptually without grammatical rules and explanations. Similarly, the Direct Method stresses oral interaction and no translation. Other classifications based on a role of reading skill development, memorization, physical activity and discovery are beyond the scope of this work.

In order to model the teaching process an additional modeling tool is required i.e. a UML state diagram. A state diagram has a collection of states that correspond to the phases of the modeled process. This type of diagram is often helpful when there are explicit or implicit references to states in the subject area, like steps or phases in a technological process.

Materials used for teaching foreign languages, such as the teaching of declinations, can be divided into material segments. Each segment consists of rules, templates and examples. Frequently there are two types of rules: declination tables (referred to simply as "declinations") and usage rules (referred to simply as "usage").

Rules, templates and examples are interrelated. This means that some examples correspond to some template and to some rules. Declinations and usage are also interrelated. This means that some declination forms correspond to some usage forms. Each material segment is related with background material segments. Each background material segment is structured the same way.

There are also usage rules such as:

- The third person forms of polite address take the third person of the verb.
- PAN and PANI may be used either with the first or last name. The use with the first name is considered polite, while the use with the last name connotes formality.

In addition to the rules, examples can be used:

- CZY PAN ROZUMIE TO? (Do you (sir) understand that?)

Based on examples, templates can be developed:

- CZY \_\_\_\_ROZUMIE TO?

Rules, templates and examples are interrelated. This means that some examples correspond to some template and to some rules. Declinations and usage are also

interrelated. This means that some declination forms correspond to some usage forms. Each material segment is related with background material segments. Each background material segment is structured the same way. The UML model for material segments in teaching declinations in foreign languages is shown in Figure 3. For readability purposes, the relationships between rules, templates and examples in a material segment with the rules, templates and examples in a background material segment are omitted. They are symbolically represented by the relationship, *requires*, shown between a material segment and a background material segment.

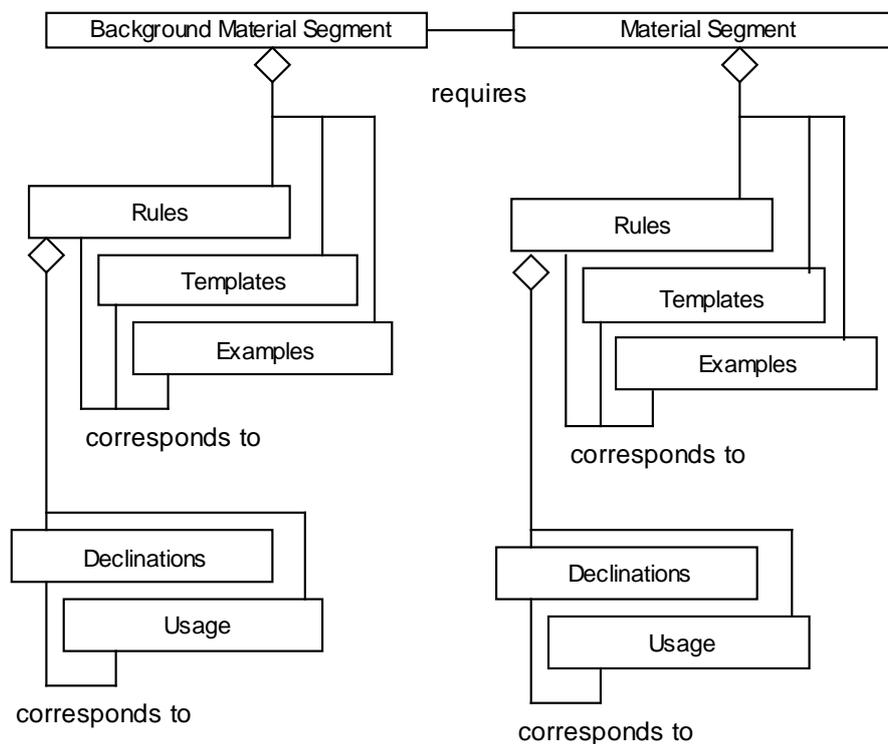


Figure 3. UML Model for Material Segments in Teaching Declinations in Foreign Languages

## 5. Modeling of online teaching methods

The teaching process requires a modeling tool based on state diagram. A state diagram has a collection of states that correspond to the phases of the modeled process. This type of diagram is often helpful when there are explicit or implicit references to states in the subject area, like steps or phases in a technological process.

We will concentrate on teaching methods based on traversing between different abstraction levels and according to scheme, "Practice-Theory-Practice." In teaching

declinations in foreign languages, we identify three levels associated primarily with using examples, templates and rules.

### 5.1. Template-based Teaching of the Concept of "Polite Address" in Polish

There are many methods used to teach foreign language, such as Polish. Let us first consider the method of teaching based on templates. In this method of teaching, in the first phase, we operate on the level of examples. This means examples are presented to students, e.g. E1 and E2.

E1: CZY PAN JEST TUTAJ? (Are you here, sir?)  
E2: CZY ON JEST TUTAJ? (Is he here?)

In the second phase, an explicit or implicit template T1 is constructed based on these examples:

T1: CZY \_\_\_\_\_ JEST TUTAJ?

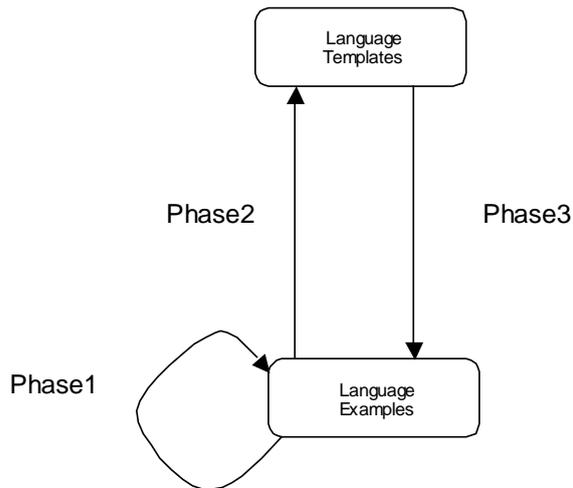


Figure 4. UML Model for Template-based Teaching of Declinations in Foreign Languages

In the third phase the template T1 is filled with appropriate entries so that the examples are constructed, e.g. E3:

E3: CZY PANI JEST TUTAJ? (Are you here, ma'am?).

This method of teaching is referred to as "template-based-teaching" and is represented by the UML state diagram shown in Figure 4.

## 5.2. Rule-based Teaching of the Concept of "Polite Address" in Polish

Now let us consider the method of teaching based on rules. In this method of teaching, in the first phase, we operate on the level of examples that are presented to students, e.g. E4.

E4: WIDZE TUTAJ PANA . (I see you here, sir?)

In the second phase, an explicit template T2 is constructed based on these examples:

T2: WIDZE TUTAJ \_\_\_\_\_.

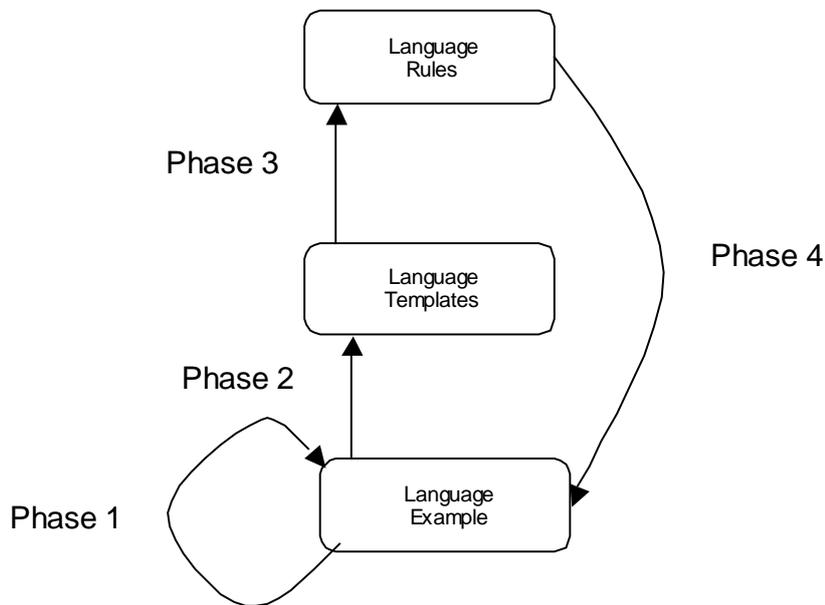


Figure 5. UML Model for Simple Rule-based Teaching Declinations in Foreign Languages

In the third phase, all relationships between the template T2 and rules and usage need to be determined by the instructor. In this case, it can be determined that the Accusative form is required in the declination rules. This also means that we now move to the level of rules. In the fourth phase, we fill-in the template with appropriate entry from the declination table as shown in E5:

E5: WIDZE TUTAJ PANIA . (I see you here, ma'am?)

This method of teaching is referred to as "simple rule-based-teaching" and is represented by the UML state diagram shown in Figure 5.

### 5.3. Advanced Rule-based Teaching of the Concept of "Polite Address" in Polish

Now let us now consider the advanced method of teaching based on rules. In this method of teaching, in the first phase, we also operate on the level of examples. It means examples are presented to students, e.g. E6.

E6: KUPILEM PANU ZEGAREK . (I bought you a watch, sir?)

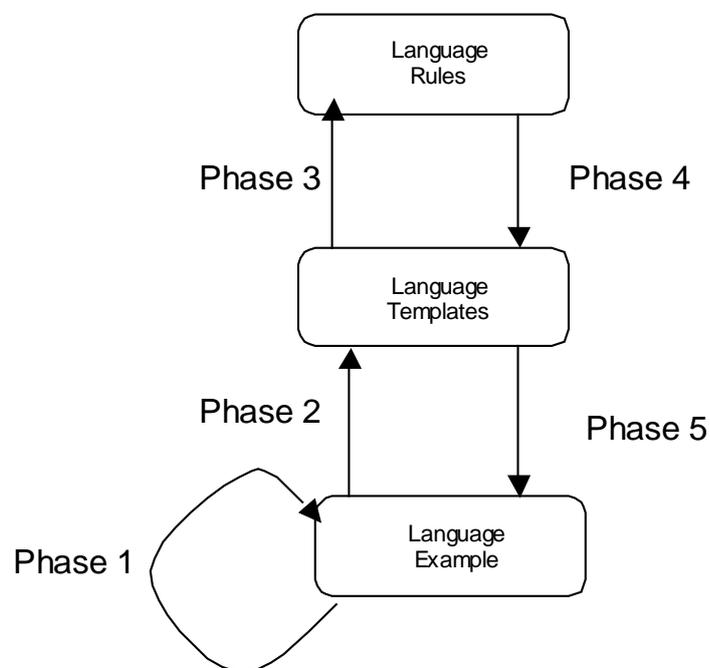


Figure 6. UML Model for Advanced Rule-based Teaching Declinations in Foreign Languages

In the second phase, an explicit template T3 is constructed based on these examples:

T3: KUPILEM \_\_\_\_ ZEGAREK.

In the third phase, all relationships between the template T3 and rules and usage are determined. In this case, it is determined that the Dative form is required and no usage rules are involved. It means that we now operate on the level of rules.

In the fourth phase, we generate different templates with the same entry from the declination table as shown in T4

T4: DALEM \_\_\_\_\_ PREZENT.

In the last phase, we fill-in the template with appropriate entry from the declination table as shown in E7

E7: DALEM PANI PREZENT . (I gave you present, ma'am.)

This method of teaching, referred to as "advanced rule based-teaching," can be represented by UML state diagram shown in Figure 6.

## 6. Experiments

The discussion of this paper was supported by practical implementation of distance education at education at Edinboro University of Pennsylvania and its sister institutions organized into Western Pennsylvania Consortium for the Advancement of Language and Culture Studies.

The preparation was based on the assumption that the material segments were designed as delivery independent i.e. that can be used for both traditional and online teaching.

The results can be described as follows:

1. The learning curve seems to be an important factor for deciding the delivery method. More specifically the Student mistakes are important factor for selecting the delivery method but the algorithm is not completely clear. The case studies have shown that for the high mistake level it is crucial to differentiate between students who were making mistakes and those who were just guessing the answers. The students who were making mistakes benefitted from synchronous method of communication. The students who were guessing the results were better off with the asynchronous mode.
2. Generally, the synchronous mode is required for verbal aspect of teaching. However, we can use the asynchronous mode for teaching the grammar. Our experiments of using template and rules methods have shown that student-student feedback can be useful in teaching foreign languages. More specifically, the template method requires a complex template selection to allow a "natural" flow of exchange of student-to-student messages. The rule method is more theoretical and rules can be discussed on the individual basis.

## 7. Summary

In this paper we showed how to analyze distance teaching of foreign languages with assistance Unified Modeling Language (UML). It was shown that the UML can help to classify material segments and their method of improved delivery. The factors for deciding the delivery method were analyzed and described.

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#### Appendix A. Declination of forms of polite address in Polish

Nominative	PAN	PANI	PANOWIE	PANIE	PANSTWO
Genitive	PANA	PANI	PANOW	PAN	PANSTWA
Dative	PANU	PANI	PANOM	PANIOM	PANSTWU
Accusative	PANA	PANIA	PANOW	PANIE	PANSTWA
Instrumental	PANEM	PANIA	PANAMI	PANIAMI	PANSTWEM
Locative	PANU	PANI	PANACH	PANIE	PANSTWU
Vocative	PANIE	PANI	PANOWIE	PANIE	PANSTWU

**Title:** Adoption of Technology in Hawaii Schools: *Social and Educational impact of education technology on cultural relevance in K-12 on O'ahu.*

**Topic Area of Submission:** Education Technology

**Presentation Format:** Paper Session

**Description:** This paper presentation explores the impact of educational technology in K-12 schools in Hawaii and attempts to examine the implications on cultural values and relevance for students and educators. Education technology plays an important role in course content delivery, classroom experience, and assessment of student performance. However, this study attempts to understand the juxtaposition of technology and cultural importance for the Hawaiian educational system. Resources, tools, and techniques for implementation will be presented and shared in this presentation.

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**Abstract:** A fast paced technology driven world surrounds today's K-12 students and balancing this paradigm with the cultural traditions of Hawaii has been increasingly difficult. The use of technology in education is a continually growing topic in educational leadership, administration, teaching, and instructional design. The effects of technological integration on the cultural values for students and educators needs to be considered in order for a stable system of educational leadership to assist in maintaining a solid connection to the past while preparing for a hi-tech future. The bridge between these seemingly opposing worlds lies in leadership that allows for increasing cultural relevance by incorporating traditional norms through new media systems in the educational experience, while highlighting the positive effects of cultural values applied to new technologies in building a more well-rounded and prepared student.

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### **Dr. James J. Jaurez, National University, San Diego, CA**

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## **Introduction**

In the K-12 environment on Oahu, Hawaii, as well as across the United States, there is a prevalent drive to utilize technology in order to better facilitate educational processes, as well as engage and motivate teachers and learners (Bunag, 2012; Mireles, 2012). Technology in the classroom is defined as computer based, networked, and digital media that facilitates advanced learning environments (Horton, 2011). Education technology and cultural identity often find themselves at odds or in competition for relevance in student's personal and academic life on Oahu.

Much of the traditional Hawaiian "way" relies on externalized activities, where people or surroundings provide context and positioning for perspective and behavior. For some Hawaiian students, qualities of cultural identity may include an appreciation for thoughtful or extended processes of communication and productivity, which can appear slower or less engaged from an outside perspective (Affonso et al., 2010; Kana'iaupuni, 2004). Additionally, the Hawaiian culture embraces implicit non-verbal modes for information transfer and collective interpersonal and environmental interactions (Au & Blake, 2003; Correa, 2013).

Information technology can indeed bolster the pervasiveness and understanding of Hawaiian culture (Iding & Skouge, 2005; Warschauer, 2000). However the mechanical nature of technology can be significantly different than the established elements of Hawaiian thoughts and behaviors, both in modes of interaction and ways of processing information. Educational innovations through technology often promote explicit communication, using detailed and often vast amounts of data, the student learns in an internalized manner that promotes individual accomplishment (Horton, 2011; Warschauer, 2000).

The questions become, does the non-verbal expression and relationship to surroundings associated with the Hawaiian perspective find itself contentiously positioned against the inherently individualistic and discrete communication of modern technology? Or do the unique qualities shared by Hawaiian students actually lend themselves to greater adoption and embrace of new technologies? This preliminary review of literature explores the possible factors, individuals, and environments to discover the major and minor discourses on the connection between Native Hawaiian identity and education technology.

## **Background**

Bunag (2012), shows that Hawaii schools, and especially Hawaiian-focused charter schools, face major issues financing education costs and upgrading technological infrastructure. Boulay (2008), demonstrates that the US DOE invests over \$400 million dollars across over 400 different programs in pre-service training for education technology to effectively enhance student learning. According to Acopan-Tuasivi (2012), the United States in the last three decades is spending over twice as much money on education, without demonstrating significant improvement in academic performance. According to Ng (2012) there may not be a direct correlation to professional development and completion rates for Native Hawaiians.

Ng (2010), stated that as of 2005 Native Hawaiians were the least likely minority to graduate from high school on Hawaii. According to Singh (2011), No Child Left Behind (NCLB) is designed to benefit and bolster achievement for a number of marginalized groups, including minorities, socioeconomic class, special education (SPED), and Limited English Proficiency (LEP) individuals. Bunag (2012), points out the No Child Left Behind (NCLB),

using Adequate Yearly Progress (AYP), goals provides and standard and mandate for 100% proficiency in schools by 2014.

According to Leslein-Yoshihiro (2008), the role of administration in support of education technology and the surrounding training on its implementation in the classroom was critical to the success of adoption across multiple Hawaiian K-12 schools. According to Bunag (2012), the use of Evidence-Based Model (EBM) and Odden's Ten Strategies for Doubling Student Performance are effective means for managing and bolstering the efficiency of resource allocation in Hawaii schools. According to Ng (2011) educational leadership, beyond instruction, plays a significant role in the completion rates of Native Hawaiians.

Guided by the Hawaii Department of Education (HDOE), the general learner outcomes (GLOs) for public K-12 students include self-directed learner, community contributor, complex thinker, quality producer, effective communicator, and effective user of technology (HDOE, 2013). The HDOE lists the primary public schools for its education technologies resources in their Strategic Plan, Race to the Top initiative, and the Strive HI system as Waianae, Nanakuli, Waialua, Leilehua, Mililani, Kapolei, Waipahu, Campbell, Pearl City, Aiea, Radford, Moanalua, Farrington, McKinley, Roosevelt, Kaimuki, Kalani, Kaiser, Kailua, Kalaheo, Castle, and Kahuku High Schools, with additions of intermediate and elementary school education technology. In additions there are many private and charter schools servicing Hawaiian students with the use of education technology throughout Oahu, which are funded by private and corporate grants, government and educational grants, and in conjunction with the various university systems.

## **Native Hawaiian Culture, Identity, and Learning Style**

The stress on social connectedness transcends the adoption of technology through the history of the Hawaii archipelago. According to Kana'iaupuni (2004), the strength of Hawaii innovation or scientific perspective embraces self-efficacy, positive coping, practical knowledge, and persistence as represented in the ancestral journey. According to Au and Blake (2003), the definition of Hawaiian identity includes social class, ethnicity, and primary language. Kaimipono Kaiwi and Kahumoku III (2006), points out that Kanaka Moali (Native Hawaiians) view teaching and learning through makawalu, or “having eight eyes” or native perspective, which is a holistic amalgam of language, epistemology, and text.

Kana'iaupuni and Malone (2006), discusses the modern transformation of Hawaii into a metropolitan society, and its impact to diminish the meaning of “place” or home to the native Hawaiian people. Hall (2005) describes the commodification of Hawaii themes and cultural elements, giving a false sense of the native lifestyle. Hawaiians contribute much of their genealogical identity to the natural surroundings of nature, including from the mountain to the sea and everything in between. Kana'iaupuni and Malone (2006), indicate the significance of these natural surroundings on impacting the Native Hawaiians throughout their mind, body, heritage, and collective philosophical understanding. The mythologies of the birthing of the Hawaiian Islands, created by the gods outlined the ecological apologue of po (darkness, obscurity). The Islands were created from a birthing of papahanaumoku or the earth mother and the sky father of Wakea. Wakea is also known for birthing the kalo, or the taro plant, the staple crop for the native Hawaiians as both a source of sustenance and metaphorical symbol of life. The people are intimately intertwined to their land through their identity, history, culture, and very way of living.

According to Pukui, Haertig, and Lee (2001), before religion transformed the islands, feasting was the main celebration for religious occasions and human milestones. Due to the limited resource of living on a desolate island, food was very precious making these events treasurable. It is said that filling a man's opu (belly) boosted the relationship and connection with other man. The ancestors connected these feast to old Hawaii, and every meal as communing with god.

Meyer (1998), states that logical context is related to the Hawaiian culture, in that activities and behaviors are deeply related to natural environment and the ancestral line of family. Generationally, understanding and perspective are viewed as a continuum from elders living and deceased through storytelling and cultural tradition. Spirituality and practical life are intertwined through the basic needs of community and family utilizing traditional tools. A significant component of being Hawaiian is the "unspoken" or inherent understanding of relationship between greater ways of life, expressed inner being, and the practicalities of life (Meyer, 1998).

According to Handler and Linnekin (1984) tradition cannot be defined solely through description, ancestry, or persona, rather tradition can be described in terms of consistencies and non-consistencies. According to Linnekin (1983) each generation develops and enhances their sense of tradition based from ancestral influences or consistencies. Part of the modern Hawaiian traditions is to incorporate the imported cultures that are now part of the Hawaiian Islands. This incorporation of multicultural perspectives is always infused with Hawaiian substance, thereby making it their own. For example, food has been a significant influence, malasadas, taken from the Portuguese, sweet and sour from the Chinese, Kim Chee from the Koreans, sashimi from the

Japanese and pasteles from the Puerto Rican's are just some of the contributions from these migrant countries that Hawaiians have embraced.

Beginning with the definition of "local" Hawaiian, from a linguistic perspective, the term is derived from the immigration of the plantation workers and their families (Warschauer, 2000). These workers traveled primarily from Korea, China, Japan, Portugal and the Philippines. This melting pot of diverse languages and gestures created the local Hawaiian "pidgin" language (Warschauer, 2000). This concept of "local" Hawaiian extends beyond Native Hawaiian and includes many non-Native Hawaiians through the vocabulary, cadence, and intonation, "pidgin" allows an acceptance within the communities on the islands.

Wilson and Kamanā (2006), state that advantages for Hawaiian-medium education over English-medium includes cultural connectedness, consistent identity, support for academics, English as a second language, and additional language study. According to Cabalo (2011), classroom focus and student involvement can be classified into two categories, culturally conforming with the attention on the collective, and the culturally confronting where students are engaged with an individualistic approach. Additionally, biological technologies provide a layer of connection to surroundings and interpersonal interaction through the physical mechanics of the individual.

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the learning technique commonly used for Hawaiians in the classrooms focus on the interaction and form of storytelling or informal and encouraging approach for exchanging information. Research revealed Hawaiians work best for community merit versus individual gains; these students were motivated to strive towards excellence knowing the rest of the group would benefit.

The connection to social relations and the extension to biological interactions may create a number of unique educational opportunities for Hawaiian students. Boulay (2008), stated that providing technology mentors in Hawaii schools has been shown to bolster adoption of technology in the classroom for educators and students. Kaomea (2005), states that there is increased interest in having indigenous culture incorporated into curricula and the difficulty for non-indigenous educators to represent and model the indigenous perspective. According to Freitas, Wright, Balutski, and Wu (2013) describe student development in terms of persistence, attrition, and matriculation. Hishinuma et al. (2000), states that ethnicity in terms of cultural norms, values, attitude towards minority status, and ancestry. Each of the research studies focus on varying aspects of creating environment and interactions specific to the Hawaiian perspective.

### **Mapping Native Hawaiian Learning to Education Technology**

According to Dator, Yeh, and Park (2013) technology can be defined as being physical, social, and biological. The physical elements, or in modern terms virtual elements, of technology allow the practical application of tools to multiply the attributes or talents of the user. Bunag (2012), established that the early Hawaiian education system, before the Missionary movement of the 1800s, focused on practical technologies that assisted the people in daily life on the Hawaiian archipelago. In a modern environment, according to Correa (2013), technology

can provide the tools for problem solving for real world Hawaiian cultural situations through immersive environments and computer mediate curricula. Social technologies provide means for communications between humans and approach ways of collecting and process information about the individuals' environment.

Technology implementation in education in and of itself does not guarantee improvements in achievement for Hawaiian students, but that the catered or carefully designed use of technologies can have a significant effect on performance (Leslein-Yoshihiro, 2008). The fact the education technology can be molded or shaped to include or exclude modalities or digital interaction affords this teaching medium a high level of customization. According to Miller (2002), the role of the teacher in Hawaii is becoming that of learning producer, or the individual who creates opportunities and environment by which learning and teaching can occur. The efforts to create digital learning environments often involves teams of professionals to develop including, resource and project managers, subject matter experts, instructional designers, technology specialists (web designers/developers), and teachers.

According to Mireles (2012), learning networks and development team facilitate the adoption and implementation of technology in the classroom. The timing of technology can also play a role in effectiveness as Singh (2011), stated that early childhood development in academics can significantly increase later academic achievement in Native Hawaiians. By creating custom learning experience with appropriate technology the educator has the potential to meet these unique needs for Hawaiian students.

Through the use of in class education technology like Smart boards (interactive white boards), networked computer based classrooms, electronic polling devices, mobile devices,

classroom management software and online resources, many Hawaiian K-12 classrooms are being transformed into mixed modality environments of traditional and digital learning, while some classrooms are even being facilitated primarily online (Leslein-Yoshihiro, 2008). Smart board technology allows the teacher to share presentation using a projected image, while providing the additional benefit of interaction with interface with special markers that can sense the teachers touch of the board and interact like a computer mouse (Horton, 2011). This interaction with digital whiteboards can promote tactile learning and provides a sense of physical immersion by allowing the user to approach and touch the large projection screen. Classroom activities that involve Smart boards tend to provoke a constructionist interaction or the “act of physically doing”, where students build on the teachers or other students initial work while being called to interact on the device (Leslein-Yoshihiro, 2008). This type of activity can closely resemble the more physical qualities of everyday life in the native Hawaiian tradition, because it provides direct manipulation of the environment, even though parts of the environment are digital. For example, Native Hawaiians practice working in the lo’i (taro patch, irrigated terrace) where they demonstrate the physical act of farming the land as a collective to sustain the community, and the computer based Smart board can simulate similar experience and promote community in the classroom.

Electronic polling devices and mobile technologies are quickly expanding prevalence in the onsite classroom in Hawaii K-12 education (Mireles, 2012). Through the use of less expensive handheld polling systems that incorporate a simplified user interface for eliciting student input and rapid response in data collection and analysis, these systems increase real time aspect of teaching and learning to facilitate the assessment and diagnostics for student performance (Horton, 2011). Teachers will pose questions to the class and student respond by

clicking a button on the hand held device, so a quick analysis can be performed and a collective understanding of topics can be accessed (Horton, 2011). These polling devices can be useful in connecting with the inherently social constructivist interpersonal components of the Hawaiian culture, in that they allow an expedited means for collecting the share knowledge of the group. This shared knowledge perspective can then be bolstered and the Native Hawaiian students can experience the community inclusiveness that aligns with traditional and cultural ways (Wilson & Kamanā, 2006).

This idea of mobile devices extends beyond the simple polling device to the far more technologically advanced smart phone, tablet, or laptop device. Initiatives like one-to-one computer access and BYOD (Bring Your Own Device) are providing many Hawaiian youth with access to computing and network technologies that previously were unavailable (Iding & Skouge, 2005). Mobile devices provide individual and networked learning opportunities through internet access and downloadable education applications (Horton, 2011). Although, normally associated with the individual interaction between device or software and the user, most applications increasingly provide social network integration and information exchange which assists in the constructivist elements of teaching and learning. The lack of applications or software designed specifically for Native Hawaiian in terms of leveraging particular elements of their learning styles may seemingly hinder their educational usefulness, however these programs often exhibit universal tools and interfaces for many modes of communication and can therefore be customized or designed to fit the needs of the targeted learner.

Networked internet enabled computers and devices allows for immense amounts of information and communication to be assembled and delivered to the classroom and individual students at a sometimes overwhelming rate and persistency. Learning Management Systems

(LMS) like Moodle and Edmodo (used by STEM Hawaii for teacher support), with 29 million users across the US, contains social media tools and mobile applications for accessibility (HDOE, 2013). Although the benefits of internet networked devices have been well researched and established, the inherent nature of too much information and cognitive load becomes a concern for teachers and students alike, especially in the case of Native Hawaiians who tend to experience information through implicit non-verbal and environmental sources. The explicit, direct, and individualist modality of internet browsing and application interaction does afford the opportunity for acclimation or learning of the systems, but doing so may adversely interfere or replace an established learning style, moving from Native Hawaiian style to a western perspective. Conversely, the connected devices do promote collective intelligence, social networked environments, and rapid communication with other people, which align directly with elements of the native Hawaiian style.

### **Discussion and Further Research**

Hawaii, like most states in the US, views technology in education as a powerful tool for increasing achievement and engaging students at the K-12 level and beyond. Unique to Hawaii, are its very own Native Hawaiian students and peoples, which possess a distinct perspective towards the educational environment as well as the world around them. This distinction, as island peoples, affords the individual student and community of Native Hawaiians an often admired sense of exceptionality and especially rich cultural ancestry that values family, community, art, intuition, and spirituality that is recognized throughout the world.

Traits associated with the Native Hawaiian identity often form around the emphasis within the culture on family and community that drive the individual to appreciate and associate

the betterment of others with personal achievement and reward. For education technology in the classroom setting, internet devices and social networks can help foster these social constructiveness environments and could bridge the challenges of isolationism and alienation sometimes felt by the Native Hawaiian students. Art, intuition, and spirituality can too find themselves bolstered or enhanced by education technology through graphic applications, simulations of environments, and connections to advanced digital media with stories and narratives familiar to the Native Hawaiian Culture.

As a preliminary examination of literature for the Native Hawaiian identity and the effects of educational technology with Native Hawaiian students, further research will include extended literature review, Hawaii's adoption of education technology, and reaction of Native Hawaiian students to education technology, and changes to cultural that may be caused by use of technology in K-12 on Oahu. Extensive literature review for understanding the details of culture and identity on student learning style will help shed light on the relationship between culture and education. An in-depth study of the education technology employed at specific school servicing the Native Hawaiian community can help quantify the touch points for education technology and the effectiveness of current technology on Native Hawaiian students. Last, the exploration of the effects of technology on the cultural-placidity (changing of traditional and modern culture) for K-12 students on Oahu may yield interesting results and will be examined in future research.

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**Title:** Adoption of Technology in Hawaii Schools: *Social and Educational impact of education technology on cultural relevance in K-12 on O'ahu.*

**Topic Area of Submission:** Education Technology

**Presentation Format:** Paper Session

**Description:** This paper presentation explores the impact of educational technology in K-12 schools in Hawaii and attempts to examine the implications on cultural values and relevance for students and educators. Education technology plays an important role in course content delivery, classroom experience, and assessment of student performance. However, this study attempts to understand the juxtaposition of technology and cultural importance for the Hawaiian educational system. Resources, tools, and techniques for implementation will be presented and shared in this presentation.

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**Abstract:** A fast paced technology driven world surrounds today's K-12 students and balancing this paradigm with the cultural traditions of Hawaii has been increasingly difficult. The use of technology in education is a continually growing topic in educational leadership, administration, teaching, and instructional design. The effects of technological integration on the cultural values for students and educators needs to be considered in order for a stable system of educational leadership to assist in maintaining a solid connection to the past while preparing for a hi-tech future. The bridge between these seemingly opposing worlds lies in leadership that allows for increasing cultural relevance by incorporating traditional norms through new media systems in the educational experience, while highlighting the positive effects of cultural values applied to new technologies in building a more well-rounded and prepared student.

## **Author Bios:**

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Helene S.M. Honda, MSCP is a candidate in EdD Organization Leadership at Argosy University in Honolulu Hawaii. Ms. Honda has a Master's Degree in Counseling Psychology. Ms. Honda has extensive instructional experience in educational settings, including facilitating career classes for adults diagnosed with psychological conditions as well as employees of organizations. A frequent speaker in college, high school, and elementary school classrooms, Ms. Honda developed, implemented, and instructed programs and classes on topics including those directed by my current part-time employer, the Native Hawaiian Roll Commission. Ms. Honda is skilled at developing curricula that is understandable for students based on their learning abilities.

### **Dr. James J. Jaurez, National University, San Diego, CA**

James J. Jaurez, PhD is an Assistant Professor with National University's School of Engineering, Technology, and Media. Dr. Jaurez teaches courses in Computer Science, Educational and Instructional Technology, and Digital Media Design programs, which has lead him to pioneer a fusion of the education and computing technology disciplines. As lead researcher and co-PI on Hewlett Packard Technology for Teaching – Higher Education – Leadership Grant 2008 and Catalyst Grant 2010, Dr Jaurez has worked extensively in Game Design Methodology as a novel teaching framework for STEM+ courses. A PhD from Nova Southeastern University, his dissertation work is in Research and Development in the discipline of Computing Technology in Education. As board member for an organization called Learning for Life, Dr. Jaurez also uses video game technology to inspire juvenile court system kids in the area of science, technology, engineering and mathematics (STEM). His aim is to encourage academic and professional career paths in gaming, and inspire "at risk" youth to enroll in college. Dr. Jaurez also sits on the board of his local church and assists with outreach programs and ministries.

## **Introduction**

In the K-12 environment on Oahu, Hawaii, as well as across the United States, there is a prevalent drive to utilize technology in order to better facilitate educational processes, as well as engage and motivate teachers and learners (Bunag, 2012; Mireles, 2012). Technology in the classroom is defined as computer based, networked, and digital media that facilitates advanced learning environments (Horton, 2011). Education technology and cultural identity often find themselves at odds or in competition for relevance in student's personal and academic life on Oahu.

Much of the traditional Hawaiian "way" relies on externalized activities, where people or surroundings provide context and positioning for perspective and behavior. For some Hawaiian students, qualities of cultural identity may include an appreciation for thoughtful or extended processes of communication and productivity, which can appear slower or less engaged from an outside perspective (Affonso et al., 2010; Kana'iaupuni, 2004). Additionally, the Hawaiian culture embraces implicit non-verbal modes for information transfer and collective interpersonal and environmental interactions (Au & Blake, 2003; Correa, 2013).

Information technology can indeed bolster the pervasiveness and understanding of Hawaiian culture (Iding & Skouge, 2005; Warschauer, 2000). However the mechanical nature of technology can be significantly different than the established elements of Hawaiian thoughts and behaviors, both in modes of interaction and ways of processing information. Educational innovations through technology often promote explicit communication, using detailed and often vast amounts of data, the student learns in an internalized manner that promotes individual accomplishment (Horton, 2011; Warschauer, 2000).

The questions become, does the non-verbal expression and relationship to surroundings associated with the Hawaiian perspective find itself contentiously positioned against the inherently individualistic and discrete communication of modern technology? Or do the unique qualities shared by Hawaiian students actually lend themselves to greater adoption and embrace of new technologies? This preliminary review of literature explores the possible factors, individuals, and environments to discover the major and minor discourses on the connection between Native Hawaiian identity and education technology.

## **Background**

Bunag (2012), shows that Hawaii schools, and especially Hawaiian-focused charter schools, face major issues financing education costs and upgrading technological infrastructure. Boulay (2008), demonstrates that the US DOE invests over \$400 million dollars across over 400 different programs in pre-service training for education technology to effectively enhance student learning. According to Acopan-Tuasivi (2012), the United States in the last three decades is spending over twice as much money on education, without demonstrating significant improvement in academic performance. According to Ng (2012) there may not be a direct correlation to professional development and completion rates for Native Hawaiians.

Ng (2010), stated that as of 2005 Native Hawaiians were the least likely minority to graduate from high school on Hawaii. According to Singh (2011), No Child Left Behind (NCLB) is designed to benefit and bolster achievement for a number of marginalized groups, including minorities, socioeconomic class, special education (SPED), and Limited English Proficiency (LEP) individuals. Bunag (2012), points out the No Child Left Behind (NCLB),

using Adequate Yearly Progress (AYP), goals provides and standard and mandate for 100% proficiency in schools by 2014.

According to Leslein-Yoshihiro (2008), the role of administration in support of education technology and the surrounding training on its implementation in the classroom was critical to the success of adoption across multiple Hawaiian K-12 schools. According to Bunag (2012), the use of Evidence-Based Model (EBM) and Odden's Ten Strategies for Doubling Student Performance are effective means for managing and bolstering the efficiency of resource allocation in Hawaii schools. According to Ng (2011) educational leadership, beyond instruction, plays a significant role in the completion rates of Native Hawaiians.

Guided by the Hawaii Department of Education (HDOE), the general learner outcomes (GLOs) for public K-12 students include self-directed learner, community contributor, complex thinker, quality producer, effective communicator, and effective user of technology (HDOE, 2013). The HDOE lists the primary public schools for its education technologies resources in their Strategic Plan, Race to the Top initiative, and the Strive HI system as Waianae, Nanakuli, Waialua, Leilehua, Mililani, Kapolei, Waipahu, Campbell, Pearl City, Aiea, Radford, Moanalua, Farrington, McKinley, Roosevelt, Kaimuki, Kalani, Kaiser, Kailua, Kalaheo, Castle, and Kahuku High Schools, with additions of intermediate and elementary school education technology. In additions there are many private and charter schools servicing Hawaiian students with the use of education technology throughout Oahu, which are funded by private and corporate grants, government and educational grants, and in conjunction with the various university systems.

## **Native Hawaiian Culture, Identity, and Learning Style**

The stress on social connectedness transcends the adoption of technology through the history of the Hawaii archipelago. According to Kana'iaupuni (2004), the strength of Hawaii innovation or scientific perspective embraces self-efficacy, positive coping, practical knowledge, and persistence as represented in the ancestral journey. According to Au and Blake (2003), the definition of Hawaiian identity includes social class, ethnicity, and primary language. Kaimipono Kaiwi and Kahumoku III (2006), points out that Kanaka Moali (Native Hawaiians) view teaching and learning through makawalu, or “having eight eyes” or native perspective, which is a holistic amalgam of language, epistemology, and text.

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According to Pukui, Haertig, and Lee (2001), before religion transformed the islands, feasting was the main celebration for religious occasions and human milestones. Due to the limited resource of living on a desolate island, food was very precious making these events treasurable. It is said that filling a man's opu (belly) boosted the relationship and connection with other man. The ancestors connected these feast to old Hawaii, and every meal as communing with god.

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Japanese and pasteles from the Puerto Rican's are just some of the contributions from these migrant countries that Hawaiians have embraced.

Beginning with the definition of "local" Hawaiian, from a linguistic perspective, the term is derived from the immigration of the plantation workers and their families (Warschauer, 2000). These workers traveled primarily from Korea, China, Japan, Portugal and the Philippines. This melting pot of diverse languages and gestures created the local Hawaiian "pidgin" language (Warschauer, 2000). This concept of "local" Hawaiian extends beyond Native Hawaiian and includes many non-Native Hawaiians through the vocabulary, cadence, and intonation, "pidgin" allows an acceptance within the communities on the islands.

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The connection to social relations and the extension to biological interactions may create a number of unique educational opportunities for Hawaiian students. Boulay (2008), stated that providing technology mentors in Hawaii schools has been shown to bolster adoption of technology in the classroom for educators and students. Kaomea (2005), states that there is increased interest in having indigenous culture incorporated into curricula and the difficulty for non-indigenous educators to represent and model the indigenous perspective. According to Freitas, Wright, Balutski, and Wu (2013) describe student development in terms of persistence, attrition, and matriculation. Hishinuma et al. (2000), states that ethnicity in terms of cultural norms, values, attitude towards minority status, and ancestry. Each of the research studies focus on varying aspects of creating environment and interactions specific to the Hawaiian perspective.

### **Mapping Native Hawaiian Learning to Education Technology**

According to Dator, Yeh, and Park (2013) technology can be defined as being physical, social, and biological. The physical elements, or in modern terms virtual elements, of technology allow the practical application of tools to multiply the attributes or talents of the user. Bunag (2012), established that the early Hawaiian education system, before the Missionary movement of the 1800s, focused on practical technologies that assisted the people in daily life on the Hawaiian archipelago. In a modern environment, according to Correa (2013), technology

can provide the tools for problem solving for real world Hawaiian cultural situations through immersive environments and computer mediate curricula. Social technologies provide means for communications between humans and approach ways of collecting and process information about the individuals' environment.

Technology implementation in education in and of itself does not guarantee improvements in achievement for Hawaiian students, but that the catered or carefully designed use of technologies can have a significant effect on performance (Leslein-Yoshihiro, 2008). The fact the education technology can be molded or shaped to include or exclude modalities or digital interaction affords this teaching medium a high level of customization. According to Miller (2002), the role of the teacher in Hawaii is becoming that of learning producer, or the individual who creates opportunities and environment by which learning and teaching can occur. The efforts to create digital learning environments often involves teams of professionals to develop including, resource and project managers, subject matter experts, instructional designers, technology specialists (web designers/developers), and teachers.

According to Mireles (2012), learning networks and development team facilitate the adoption and implementation of technology in the classroom. The timing of technology can also play a role in effectiveness as Singh (2011), stated that early childhood development in academics can significantly increase later academic achievement in Native Hawaiians. By creating custom learning experience with appropriate technology the educator has the potential to meet these unique needs for Hawaiian students.

Through the use of in class education technology like Smart boards (interactive white boards), networked computer based classrooms, electronic polling devices, mobile devices,

classroom management software and online resources, many Hawaiian K-12 classrooms are being transformed into mixed modality environments of traditional and digital learning, while some classrooms are even being facilitated primarily online (Leslein-Yoshihiro, 2008). Smart board technology allows the teacher to share presentation using a projected image, while providing the additional benefit of interaction with interface with special markers that can sense the teachers touch of the board and interact like a computer mouse (Horton, 2011). This interaction with digital whiteboards can promote tactile learning and provides a sense of physical immersion by allowing the user to approach and touch the large projection screen. Classroom activities that involve Smart boards tend to provoke a constructionist interaction or the “act of physically doing”, where students build on the teachers or other students initial work while being called to interact on the device (Leslein-Yoshihiro, 2008). This type of activity can closely resemble the more physical qualities of everyday life in the native Hawaiian tradition, because it provides direct manipulation of the environment, even though parts of the environment are digital. For example, Native Hawaiians practice working in the lo’i (taro patch, irrigated terrace) where they demonstrate the physical act of farming the land as a collective to sustain the community, and the computer based Smart board can simulate similar experience and promote community in the classroom.

Electronic polling devices and mobile technologies are quickly expanding prevalence in the onsite classroom in Hawaii K-12 education (Mireles, 2012). Through the use of less expensive handheld polling systems that incorporate a simplified user interface for eliciting student input and rapid response in data collection and analysis, these systems increase real time aspect of teaching and learning to facilitate the assessment and diagnostics for student performance (Horton, 2011). Teachers will pose questions to the class and student respond by

clicking a button on the hand held device, so a quick analysis can be performed and a collective understanding of topics can be accessed (Horton, 2011). These polling devices can be useful in connecting with the inherently social constructivist interpersonal components of the Hawaiian culture, in that they allow an expedited means for collecting the share knowledge of the group. This shared knowledge perspective can then be bolstered and the Native Hawaiian students can experience the community inclusiveness that aligns with traditional and cultural ways (Wilson & Kamanā, 2006).

This idea of mobile devices extends beyond the simple polling device to the far more technologically advanced smart phone, tablet, or laptop device. Initiatives like one-to-one computer access and BYOD (Bring Your Own Device) are providing many Hawaiian youth with access to computing and network technologies that previously were unavailable (Iding & Skouge, 2005). Mobile devices provide individual and networked learning opportunities through internet access and downloadable education applications (Horton, 2011). Although, normally associated with the individual interaction between device or software and the user, most applications increasingly provide social network integration and information exchange which assists in the constructivist elements of teaching and learning. The lack of applications or software designed specifically for Native Hawaiian in terms of leveraging particular elements of their learning styles may seemingly hinder their educational usefulness, however these programs often exhibit universal tools and interfaces for many modes of communication and can therefore be customized or designed to fit the needs of the targeted learner.

Networked internet enabled computers and devices allows for immense amounts of information and communication to be assembled and delivered to the classroom and individual students at a sometimes overwhelming rate and persistency. Learning Management Systems

(LMS) like Moodle and Edmodo (used by STEM Hawaii for teacher support), with 29 million users across the US, contains social media tools and mobile applications for accessibility (HDOE, 2013). Although the benefits of internet networked devices have been well researched and established, the inherent nature of too much information and cognitive load becomes a concern for teachers and students alike, especially in the case of Native Hawaiians who tend to experience information through implicit non-verbal and environmental sources. The explicit, direct, and individualist modality of internet browsing and application interaction does afford the opportunity for acclimation or learning of the systems, but doing so may adversely interfere or replace an established learning style, moving from Native Hawaiian style to a western perspective. Conversely, the connected devices do promote collective intelligence, social networked environments, and rapid communication with other people, which align directly with elements of the native Hawaiian style.

### **Discussion and Further Research**

Hawaii, like most states in the US, views technology in education as a powerful tool for increasing achievement and engaging students at the K-12 level and beyond. Unique to Hawaii, are its very own Native Hawaiian students and peoples, which possess a distinct perspective towards the educational environment as well as the world around them. This distinction, as island peoples, affords the individual student and community of Native Hawaiians an often admired sense of exceptionality and especially rich cultural ancestry that values family, community, art, intuition, and spirituality that is recognized throughout the world.

Traits associated with the Native Hawaiian identity often form around the emphasis within the culture on family and community that drive the individual to appreciate and associate

the betterment of others with personal achievement and reward. For education technology in the classroom setting, internet devices and social networks can help foster these social constructiveness environments and could bridge the challenges of isolationism and alienation sometimes felt by the Native Hawaiian students. Art, intuition, and spirituality can too find themselves bolstered or enhanced by education technology through graphic applications, simulations of environments, and connections to advanced digital media with stories and narratives familiar to the Native Hawaiian Culture.

As a preliminary examination of literature for the Native Hawaiian identity and the effects of educational technology with Native Hawaiian students, further research will include extended literature review, Hawaii's adoption of education technology, and reaction of Native Hawaiian students to education technology, and changes to cultural that may be caused by use of technology in K-12 on Oahu. Extensive literature review for understanding the details of culture and identity on student learning style will help shed light on the relationship between culture and education. An in-depth study of the education technology employed at specific school servicing the Native Hawaiian community can help quantify the touch points for education technology and the effectiveness of current technology on Native Hawaiian students. Last, the exploration of the effects of technology on the cultural-placidity (changing of traditional and modern culture) for K-12 students on Oahu may yield interesting results and will be examined in future research.

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## **Creating a Learning Community Where Black Men Excel Academically**

Duane O. Reid Jr.

Baltimore City Community College, Academic Acceleration for African American Males (4A)

Baltimore City Community College (BCCC) is implementing a student success model entitled Academic Acceleration for African American males (4A) program. The presentation will highlight the national, regional, and BCCC data trends regarding Black Male retention and completion rates. A discussion on the source of funding for this program and the main components of the model will show the direct impact on the men and the subsequent impact on the campus and surrounding community. The moderators will provide tangible information pertaining to the main events and programs and lead a discussion on how elements of the 4A program can enrich similar programs as well as be informed by comparable efforts.

### **Biographical Sketch:**

Duane O. Reid Jr. is currently the Project Director of The Academic Acceleration for African American Males (4A) Program at Baltimore City Community College. He received his BA degree in History Pre- Law from Columbia Union College in 2001 and his MBA degree from Columbia Union College in 2009. He went on to receive his M.A. in Public Administration in May 2011 from Washington Adventist University. Mr. Reid has been working in Higher Education since 2006. Prior to accepting his current post at BCCC in 2012 he served in various positions including; Associate dean of Men, Associate Director of Admissions, and Director of Admissions and Recruitment.

## **Abstract**

**Title: Are you prepared to use a variety of computer technology tools to improve your ELL students' learning outcomes?**

By Mautumua Porotesano and Kim Weolsoon Rupnow

### **Abstract:**

The growing number of English Language Learners (ELL) in schools in the U.S. has motivated teachers to expand beyond linear, text-based learning and explore innovative strategies to meet the needs of their students. With modern technologies on the rise, staying abreast of the latest trends in this digital information age not only has potential to engage students who learn best in other ways but can also better equip students with skills that are beneficial for life beyond school. The purpose of this presentation is to showcase a variety of computer-related strategies for improving literacy skills that were shared through an online Professional Development (PD) course offered to teachers with the Hawaii Department of Education. The two presenters from the University of Hawaii Center on Disability Studies, course instructor and project director, will present some of the online technology tools available for K-12 teachers to supplement their classroom lessons and improve ELLs' writing skills. They will also share a selection of PD trainees' learning portfolios and writing samples of their ELL students' pre- and post-technology work. In conclusion, the presenters will attempt to answer the following questions: Is technology more engaging, thus showing potential for improving the ELL case students' writing skills? What kind of online computer technology tools are available, and how have they been used to engage students' learning?

**THE ROLE OF FOLK MUSIC IN TRADITIONAL AFRICAN  
SOCIETY: THE IGBO EXPERIENCE**

**BY**

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## **ABSTRACT**

Folk music is spontaneously composed music of a race, tribe, group etc of a humble nature, orally transmitted from generation to generation with an unknown composer. The traditional Igbo society was not a literate one. We had our culture, traditions and music before the coming of the early missionaries. In the olden days, Igbo people did not derive entertainment from books rather they developed and derived joy from imaginations through oral narratives including traditional (folk) music and dance. According to Emenyonu (1978), Igbo oral tradition or folklore (oral performance) is the foundation of the traditional Igbo music and they include folksongs, folktales, proverbs, prayers including incantations, histories, legends, myths, drama, oratory and festivals. In Africa generally, music plays an important part in the lives of the people and one of the major characteristics of African music is that it has function. The various stages of the life-cycle of an individual and the life-cycles of the society are all marked with music.

**Definition:**

Folk music is the term used to designate the traditional music of a people in contrast to the so called popular music and the serious music of concert halls and opera houses. The best approach to defining folk music may be to identify some of the characteristics none of which by themselves are the exclusive property of folk songs but all of which taken together serve to distinguish it.

**Origin:**

Folk music originated in the 19th century as a term for musical folklore. It has been defined in several ways; as music transmitted by word of mouth, music of the lower classes, music with no known composer been contrasted with commercial and classical styles. Since the middle of the 20th century the term has also been used to describe a kind of popular music that is based on traditional music. Its genres are a fusion of folk rock, electric folk, folk metal and progressive folk music. There are extensions of the term folklore which was coined in 1846 by the English antiquarian William Thomas used to describe “the traditions, customs and superstitions of the uncultured classes”

**Characteristics:**

Folk music normally exists in oral tradition being taught and learned by word of mouth without the use of written music. Occasionally the written or printed tradition influences folk music as when art songs or popular songs are

taken up by genuine folksingers. It is the music of the rural groups, of rural origin used by recent migrations to the city. Folk songs are associated with activities such as work, games, dances, wars or religious ceremonies. There are still others which are purely for entertainment, enjoyment by the performer or listener. It is usually the music of the relatively uneducated and unsophisticated strata of the society normally produced and disseminated by formal institutions such as schools or churches.

Finally it is usually a relatively simple music when compared with concerts because it is intended to be sung by many perhaps even most ordinary individuals in a community. However, it is important to note that folk music although earlier on distinguished by its sound from the popular and concert music, always bears a close relationship historically and stylistically to the other kinds of music in the same culture.

According to Scholes (1977) in [http://en.wikipedia.org\(2010\);](http://en.wikipedia.org(2010);)

Folk music may tend to have certain characteristics but it cannot clearly be differentiated in purely musical terms. One meaning often given is that of “old songs, with no known composers”, another is that of music that has been submitted to an evolutionary.

He went further to explain that such depends upon the cultural processes rather than abstract musical types upon continuity and oral transmission. Correlating the above, Charles Seeger (1980) was quoted as having said that,

Folk music is associated with a lower class in societies which are culturally and socially stratified that is which have developed an elite, and possibly also a popular musical culture. In these terms folk music may be seen as part of a “schema comprising four musical types”, ‘primitive’ or ‘tribal’; ‘elite’ or ‘art’; ‘folk’; and ‘popular’.

### **Nature of African Music:**

Africa, home to 350 million people belonging to some 3,000 tribes and speaking some 800-1000 distinct languages is one of the most musically diversified regions of the world. The geographical variety of the continent from the mountains and the vast desert of the north to the central rain forests and the fertile southern coast are reflected in a multiplicity of musical styles.

In spite of this diversity, unifying features may be identified. African music is primarily percussive with drums, rattles, bells and gongs dominating. The important melodic instruments include Xylophones and plucked strings which are played with percussive techniques. African melodies are based on short units, on which performers improvise. Though the melodies are often simple, the rhythms

are complex by European standards with much syncopations hemiola and polyrhythm. An unusual aspect of African rhythm is what has been called the 'metronome sense' which is the ability of many musicians to perform for long periods without deviating from the exact tempo. Group performances are most typical and the 'call – and – response style with a solo leader and responsorial group used throughout the continent. In Africa, participation in music is spontaneous and voluntary. It is also an obligation imposed by one's membership of a social group or a responsibility attached to one's situation in a society. Too many however it is an economic activity and a necessity because it fetches money and the most common basis of musical organization in Africa is age and sex. There is equally a general music for everybody the aged, male and female.

For women, for instance, there are recreational music involving – grinding, pounding, cooking, sweeping, marriage rites, post natal ceremonies and other domestic duties. In some parts of West Africa for example, there is music for healing the sick, for correcting disorders, for encouragement and for endurance for women in some specified occasions.

Another important feature of African music is the existence of a wide diversity of singing and dancing styles which seem to create difficulties of understanding and appreciation by those who are not accustomed to the tradition. This diversity is partly due to linguistic factors, for many African music reflect

speech mannerisms of the various language groups including common features of speech such as rhythm and intonation. Africans depend on music as a means of communication within and outside the community. The fact is that the traditional African sees a link in time past, time present and in the future. This link is however symbolized by the sound of music.

Music is culture and with it one can give meaning to other cultural milieu within the society such objects include man, myths, spirits, animals, plants and the elements of living and non-living things plus the various forces are brought to the same level of action and interaction through the performance of folk music.

Music is not just ordinary in the African society but it is believed that all good music has a mystical connotation. The composer/performer had been taught and probably inspired by the supernatural beings either from the evil forests or the waters – Egwu m si na mmiri (my music came from the waters).

African traditional music is also the music of the farmer, the fisherman and the hunter, craft man, trader and the palm wine tapper. He composes, sings and dances and also transmits it from one generation to another through an elaborate process of specialization.

Explaining this further, Ekwonwa (2009) said;

This is also true of Yoruba music or any other group in Africa. African music maker does not describe a mood to his listeners, rather he creates (unlike the western music maker ) and puts his audience on that frame of mind. Think of late Celestine Ukwu's music display in "Onwu eme anyi, Onwu amaghi onye ukwu" (Death has no friend; death does not know a rich man)

On hearing this music alone, the mood had been created. African music can easily be altered by the use of different pitches for a particular word. Thus, it is a recognized theory in African music that the nature of inflections of speech is the ultimate origin of the concept of melody.

### **The Igbo Cultural Community**

Igbo society constitutes what linguists call a speech community. All Igbo dialects derive from one proto-Igbo language and share common grammatical, lexical and phonological characteristic. Egbule (2006) observes that: "Igbo customs are basically similar sometimes with local variations. The kolanut custom, music art, dance and literature ethics, philosophy, ritual avoidance and taboo are basically patterned to reflect an identical conception of Igbo social and ritual systems". The Igbo cultural area is delimit able by an imaginary line running outside the settlements of Agbor, Kwale, Obiaruku, Ebu (West Niger Igbo area),

Ahoada, Diobu, Umuagbanyi (Port-Harcourt area), Arochukwu, Afikpo, Ndimioafo, Isiogo (Abakaliki area) and Enugu Ezike (Nsukka area) and Nzam. This imaginary line encloses an area in which the people speak both the various dialects of the Igbo language and also share typical and significant common culture traits and pattern up to or above 50 percent. Presently the Igbo states of Nigeria include Enugu, Anambra, Imo, Abia and Ebonyi states.

### **Igbo Folk Music:**

The Igbo folk music is media through which idioms and proverbs are learnt. They are channels through which noble ideas and vices are acknowledged or condemned, encouraged or discouraged. Our folklores often times warn, praise or entertain. For instance the tortoise in the tales is reflected as a trickster and at the end is jeopardized by its activities. The ability to listen through the tales teaches children to develop attention and listening skills, perseverance, endurance etc. Folktales stresses the importance of not breaking the social norms or been a deviant. If broken, the culprit is ostracized until he restores the broken order.

Folksong is a means of social control among the citizens and a way of stamping out communal vices. In some Igbo communities masquerades are used for the administration of justice in public functions. These masquerades are ritual masks which sing, look ugly, fearful, and full of charms and are unconcerned with the entertainment of their spectators. Nevertheless, Onyeke (2009) opined that;

There are masquerades that are merely concerned with entertainment of their spectators. They are noted for chasing young boys and girls around, singing and dancing. Some are known for their ability for disclosing all evils perpetrated in the village and the perpetrators. Sometimes they mention names of those involved and the very actions performed and the day it took place.

The poetic justice found in folksongs serves the purpose to reform and instruct the society. Music arouses feelings and the intellect in Igbo culture. Some folktales are structured in a way that they are chanted with imagery having messages emerging only with deeper reflection. Quoting Bascom (1965) he said; “they play very vital roles in the education of young ones in the transmission of cultural values, customs and moral codes, social and religious institutions.

The issue of hard work among the youths is not overlooked in the communal folksongs and tales. It emphasizes self-dependence and not been lazy. Traditional Igbo folksongs are adopted even today as a way of expressing opinions on important contemporary issues.

### **Types of Traditional Igbo Music:**

These are music that goes with folktales. Examples are folktales, funeral music, entertainment and praise songs, marriage music, music for manual labour,

communicative and announcement songs. Others include songs for Truck pushing and block moulding sarcastic music, religious music, Birth song, ceremonial songs, games and puberty songs.

### **Igbo Song**

Udara m too, nda

Too, too, too, nda

Nwunye nna muo nda

Zuta udara n'ahia nda

Racha, racha, racha nda

### **English Translation**

My father's wife nda

My apple tree grow, nda

Grow, grow, grow, nda

Bought apple from the market,

Ate, ate, ate, ate nda

### **Entertainment:**

Among the Igbos, entertainment music and praise songs are quite popular. They are used to give accolade to the brave – the great warriors, hunters, chiefs, wrestlers and great achievers. In modern times however, these songs have been used to extol politicians in times of political campaigns.

### **Funeral Music:**

Burial songs for special rites are accorded old people in the traditional Igbo Community. Examples include “Ukom” and “Esse” funeral rites of Ngwa and Mbaise people of Abia and Imo states respectively. They express their status, societal bonds and their arts. “Ukom” is for the funeral honour and worthwhile “Esse” is for the funeral rites of a worthy man through and through.

The Ahiajoku Lecture Colloquium (1991) typified the importance of funeral song in Igbo society. It is laden with meaning rites due to the dead and as the expression of social values. The music and drama interplay is usually an outpouring of grief, pain, the ugly and the beautiful.

Ugo bere n’oji efeliele	Eagle perch on the Iroko don’t rise
O dikwa onye iwe ji?	Is anyone annoyed?
Ugo bere n’oji efeliele o	Eagle perch on the Iroko don’t rise
O dikwa onye iwe ji e?	Is anyone annoyed?
Dede lawa o.	Elder brother go
O dikwa onye iwe ji?	Is anyone annoyed?

### **Music for Manual Labour:**

It is believed that music which is rendered during manual labour tend to energize the labourers to perform effectively.

Onye gbuwe achara onye gbuwe,	Let each one cut his grass,
Onye akpala ibe ya	No one should call
Onye ikoni...	His fellow a prisoner

### **Sarcastic Music:**

In Igbo traditional society, sarcastic songs are usually employed to ward-off deceivers who want to cause trouble among brothers. Such scornful language is not accepted in our community.

Onye agbugba laba o,	Deceiver go
Mu na nwanne m ekpeziela	I have reconciled with my brother
Agbugba laba o	Deceiver please go
Asi m gi laba o	I say go
Mu na nwanne m ekpeziela	I have reconciled with my brother

**Religious Music:**

Among the Igbos, this is occasional music and there is a strong belief that songs are used in achieving power control, for supplications and for spiritual upliftment. Others are used for invocations, magic and for healing purposes. Religious music in Igbo is, sacred and is regarded as having extraordinary power. According to Nzewi (1989) worship finds its most respectful and satisfying mode of address in music. Also Agu (1990) observes that;

The high priest and the diviners known for their usual practice of communicating with the deities through songs which are intermittently accompanied with rhythm instruments as they invoke or consult with the deities. Most of these songs are praise songs designed to glorify or praise the deities and consequently prepare grounds for easy communication with and favourable replies from them.

**Birth Song:**

The announcement of the birth of a child is sometimes encoded in the number of long hoots or calls made by the paternal grandmother. The sex of the

baby is often not announced directly but is encoded in reference to tools or trade depending on the prevailing occupation in the locality. For example, the palm – wine tapper’s climbing – rope (agbu –nkwu) would refer to a male child while broom (aziza) or trading basket would refer to a female child. In the example below from Imezi – Owa, Ezeagu Local Government Area of Enugu State the first two lines, after koko koyi, would be chanted to announce the birth of a male child while the last two would refer to a female child.

<b>Call</b>	<b>Response</b>	<b>Call</b>	<b>Response</b>
Koko koyi!	Koko koyi;	Koko koyi	Koko koyi
Chilu agbu-nwku	Koko koyi;	Take up the palm-wine Tappers climbing rope	Koko koyi
Welu mma olu,	Koko koyi	Take up the machete,	Koko koyi
Welu azuza ezu,	Koko koyi;	Take up the broom,	Koko koyi
Vulu alia ashua,	Koko koyi	Carry the trading-basket	Koko koyi

(Okafor, R. C. 2005:50)

### **Instruments of Traditional Music:**

In Igbo culture, certain musical (local) instruments are used to transmit messages of various degrees. Such include the giant slit wooden drum (Ikoro, uhie/Ekwe), flute (Oja) and metal gong (Ogene) ngelenge (Xylophone) etc. The sound of Ikoro for example travels very fast, conveying messages for a distance of 10 kilometers or more especially at night. The Igbo prefer sending their messages

at night with these instruments because they presume that everyone had returned home.

Songs accompanied with these instruments are used to disseminate information about the outbreak of diseases and to create awareness regarding Cholera, Malaria, Measles, and HIV/AIDS etc.

### **Conclusion:**

As a result of the enormous potentials of Igbo folksongs in this work, it should be seen as a means and path of re-orientating and rebranding our people to going back to our culture through the learning of our language. This is the basic foundation for the retention of our culture.

### **Recommendations:**

The author recommends as follows: That parents should be the first music teacher of their children at home. Let us go back to our roots.

Scholarships should be awarded to students who study music to encourage them.

Parents should buy Igbo novels which are rich in Igbo folksongs. Such books include Emenajo's *Omaalinze*, Ogbalu's *Mbediogu*, Odunke's *Ojaadili* etc. These are the way forward in the retention of Igbo culture and tradition.

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**Hawaii International Conference on Education 2014**

**Title Page of Submission**

**Title of Submission:** *Is College a worthwhile investment?*

**Topic Area:** Educational Administration

**Presentation Format:** Paper session

**Short Description of Presentation:** This study was intended to examine the inner voices behind the college students and graduates' perceptions on their investment in college. Participants in this study illustrated their educational investment returns in terms of personal and professional satisfaction.

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## **Hawaii International Conference on Education (HICE) 2014**

### **Is College a Worthwhile Investment?**

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#### **Abstract**

The purpose of this research study was to examine the inner voice behind the students' and college graduates' perceptions on their investments in higher education. Case studies were used to answer the two research questions: 1) How do educational attainment and wages affect students' personal and professional satisfaction? 2) Do students perceive education as a worthwhile investment for life? How so and in what way? This study provided college students and graduates with a voice to describe their educational investment returns in terms of personal and professional satisfaction.

A review of the literature for this study examines past research on investment in education. The human capital theory suggests that education or training raises the productivity of workers by imparting useful knowledge and skills, hence, raising workers' future income by increasing their lifetime earnings (Becker, 1994). It postulates that expenditure on training and education is costly and should be considered an investment since it is undertaken largely to increase personal incomes. The human capital approach is often used to explain occupational wage differentials. Human capital can be viewed in general terms, such as the ability to read and write, or in specific terms, such as the acquisition of a particular skill with a limited industrial application. Becker's view emphasizes that human capital is similar to physical means of production, e.g., factories and machines: one can invest in human capital (via education, training, medical treatment) and one's output depends partly on the rate of return on the human capital one owns. Thus, human capital is a means of production, into which additional investment yields additional output. This theory is useful to study students' perceptions of their investment in college and their outputs during and after college. Output translates to earning, general advancement, and personal satisfaction in life.

Purposeful and snowball sampling were employed in this study. To execute case studies, interviews were conducted with nine participants on a one-on-one basis. The participants are all students and graduates from the University of Hawai'i System. Four of them enrolled in two-year community colleges and five of them enrolled in university undergraduate and graduate programs. The participants' real life stories were developed into categories, themes, and deep and rich descriptive dialogs for within-case analysis and the cross-case analysis, and ultimately they were used to answer the research questions.

The findings of this study revealed that students believed that higher education does provide higher personal satisfaction in terms of gaining valuable skills and knowledge, but does not necessarily provide professional satisfaction. Professional satisfaction represents both earning potential and their current wages and salary. Participants in this study shared that educational attainment does not guarantee higher earning because of differences in their program of study and other uncontrollable variables such as the economy. Nevertheless, they do perceive education as a worthwhile investment for life. The nine

participants unanimously believed that college made them feel more confident, better prepared them for life, taught them how to be better thinkers and how to approach and solve problems, helped them to gain technical knowledge and skills, enhanced their critical thinking, analytical, and social skills, and taught them more about themselves and their priorities in life. In general, the participants believed that all these skill sets that they earned in college were a worthwhile investment for life, as long as educational attainment and wages were not tied together. The participants simply felt uneasy about their current earnings and the loans that they had to take out to finance college.

*Keywords:* human capital, college investment, wages, personal and professional satisfaction

# **Improvement of Engineers' Moral Education Curriculum and Gaming Instructional Materials for High School Students**

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## **ABSTRACT**

The Japanese Course of Studies requires engineers' ethics education in technical high schools (Ministry of Education, Culture, Sports, Science and Technology 2012). Therefore, we advocated engineers' moral education in reference to Murai's (1988) framework for moral education, a method based on the three types of knowledge that emphasizes knowledge of situations given that ethical code and rational judgment knowledge is taught in moral education in primary and lower secondary schools. We also developed and examined lessons and e-learning materials for conducting this program at our school. In addition, because students do not have work experience in companies, they do not understand the professional situation of engineers. However, in situational knowledge, a strong emphasis was given to making students understand the reasons for leaning toward certain corporate decisions. Even so, decision making from the perspective of consumers was necessary, and thus we taught judgment practices. However, a significant number of students were inclined toward corporate decisions out of self-protection when they understood the circumstances. In this regard, as a second type of situational knowledge, this research presents an understanding whereby the true purpose of an engineer is to take precautions against incidents and accidents through learning technical knowledge and initiating technological and systematic thinking and attitudes, which the profession calls for.

## **KEYWORDS**

Moral Education in Engineering, High School Education, Instructional Games, Gaming Simulation

## **INTRODUCTION**

The Tohoku earthquake and tsunami caused great damage to an extensive area of Japan, especially the serious incident of the tsunami striking the Fukushima Daiichi nuclear power plant. Although the tsunami was a

natural disaster, it provoked many questions related with the role of engineers: “Did they pay sufficient attention to safety measures?”; “Were their assumptions about incidents too lenient?”; “Did they try to conceal the situation?”

At the higher education level, ethics education for engineers is already conducted. However, in most cases, students acquire only knowledge about such incidents through case studies by tracing the decisions made in each case and their results. On the other hand, practices of case-method teaching, in which students study the framework and sequence of consideration and learn deduction methods, have also been advancing. For example, Harris et al. (1998) and Fudano (2004) were proponents of this method. However, they did not advocate special features for the ethics education of engineers with the exception of cases and methods presented in relation to engineers’ judgments.

In Japan, morality classes are conducted in primary and lower secondary schools once a week, while the upper secondary school curriculum does not regularly include these classes, because the objectives of moral education are assumed to have been achieved. However, the social needs for engineering ethics education in upper secondary schools have increased following several incidents caused by engineers. Accordingly, we developed a small course on moral education for engineers along with e-learning materials. Our approach emphasized the connection with the moral education in lower secondary schools and focused on helping students without prior work experience to understand why these problems occurred in companies (Endo & Matsuda 2008, 2009). According to our experience, the upper secondary school students tended to consider that they would never conceal improper activities because they were unable to understand an engineer’s situation in a company, which may lead to inappropriate decision making.

There are two theoretical backgrounds to our approach. The first is Kohlberg’s (1971) theory on the developmental stages of moral judgment. This theory hypothesizes the following six stages: 1) obedience and punishment orientation; 2) self-interest orientation; 3) interpersonal accord and conformity; 4) authority and social-order maintaining orientation; 5) social contract orientation; 6) universal ethical principles. Our target students were ninth graders (aged 15–16 years) who were considered to be at the fourth stage regarding general moral judgment problems. However, learning outcomes are situation-dependent and not easy to transfer to an inexperienced area, as mentioned above regarding an engineer’s moral judgment.

For this reason, the second theoretical basis referred to Murai’s (1987) method of moral education based on the three types of knowledge: ethical code knowledge, knowledge of situations, and knowledge of rational judgment. We assumed that our students had a sufficient knowledge of ethical codes and rational judgment. In addition, they had a sufficient knowledge of situations to infer the type of results brought about by decisions in their daily lives. However, when judging an engineer’s moral problems, students did not feel a moral dilemma because they did not have a sufficient knowledge of situations. Therefore, our previous studies (Endo & Matsuda 2008, 2009) focused on providing students with knowledge of situations, such as the knowledge of human relationships within a company, the pressure from superiors, and the social and financial obligations within a company. We thus considered the main aspect in moral education for engineers to be developing an understanding of the reasons behind incorrect decisions and helping them overcome these barriers. We found this approach to be adequate because the number of factors that can be considered corresponds to Kohlberg’s developmental stages.

In our previous approach, we asked students to choose between siding with the company or consumer when an incident arose. However, it is not adequate for engineers to consider the relationship between consumers and companies to be opposing, but rather they should understand it as coexisting and mutually beneficial as consumers receive the fair benefits of the technological innovation brought by companies. To this end, engineering acts will occur before any major accident. Students need to understand that engineers should make all possible efforts to prevent dilemmas by using technological and systematic thinking as well as domain

specific knowledge to foresee and evade problems, scientifically analyze the possibility of issues arising, and lead the situation to an appropriate and logical conclusion. In addition, engineers need to cultivate an attitude of self-questioning and find the optimal solution by studying new technology on their own account. This is the second knowledge of situations that we incorporated anew into this study. If students deem that an appropriate judgment is possible by using this knowledge, their self-efficacy may increase, thus heightening their motivation to start technological education.

On the other hand, teaching the additional knowledge of situations increases the number of lesson hours; our own course is restricted to four 50-minute lessons, and we assume similar limitations to be in place in most other schools. Therefore, it is necessary to review the current curriculum and improve the efficiency of lessons, including the development and revision of e-learning materials.

## **PURPOSE**

This research aimed to improve our moral education course for engineers. It emphasized the importance of understanding the judgment framework to avoid incidents and accidents in advance along with the need to use technology knowledge appropriately. To add new teaching content, some of the redundant material included in the current curriculum should be condensed or removed to guarantee the available teaching time. To this end, we revised or developed e-learning materials for every lesson.

## **REVISION OF THE LESSON PLAN**

The first lesson in our previous course was introductory. At first, a teacher presented the “Heinz dilemma” as a familiar topic. Thereafter, a case study of deception and concealment known as “Meat Hope Corporation’s Mislabeling Scam of Meat Case” was presented in order to determine the moral development stage of each student. The second and third lessons aimed to teach the knowledge of situations for engineers in a company. In the second lesson, the information and computer technology (ICT) “Company Manager” game (Endo & Matsuda 2009) was used to teach about the roles of a company manager, and in the third lesson, students enacted several roles in a computer assembling company, such as engineer, sales staff, and complaints officer, using the ICT “Engineer in a Company” game (Endo & Matsuda 2010) to teach how people influence each other. In the fourth and final lesson, another ICT game based on the Ford Pinto case was used to train students’ comprehensive judgment skills. After these lessons, each student was asked to choose a topic and report their opinions to the following questions as homework: 1) the incident; 2) the strengths and weaknesses of whistleblowing; 3) decision-making processes of a company engineer; 4) decision-making processes of a company manager.

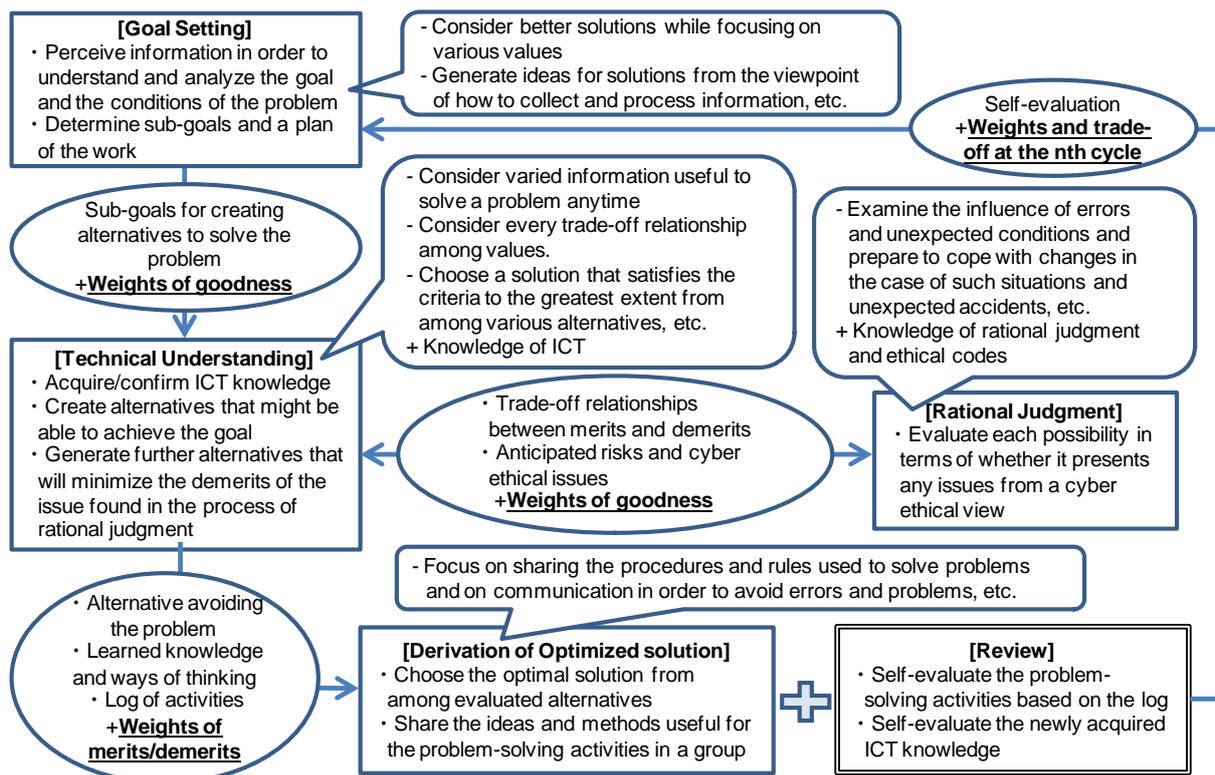
As the course emphasized teaching the first knowledge of situations, it needed to be improved by decreasing the overlapping and unnecessary contents. Firstly, as students are supposed to reach the fourth stage of general moral judgment, they do not need an introduction to the “Heinz dilemma.” In addition, we removed the “Mislabeling of Meat Scam Case” because it involved a concealment case in business ethics. Secondly, we merged the “Company Manager” and “Engineer in a Company” games, specifically by adding the role of company manager to the latter game. As a result, two hours of teaching time could be devoted to new material.

In the new curriculum, we used the first and second lessons to teach the knowledge of situations and the third and the fourth lessons to conduct judgment practices using the newly developed e-learning materials for every lesson. In the first lesson, the “Engineer in a Company” game was used to deepen students’ knowledge about companies. In the second lesson, the “Acquisition of Technology Literacy” game allowed students to recognize the importance of technological and systematic thinking as well as technological knowledge. In the

third lesson, a judgment practice game in the Science and Technology Communication field was used to ask students about the decisions of an engineer in a company after they gained an understanding of the first knowledge of situations discussed above. In the fourth lesson, the “Dilemma Block” game was the final exercise, especially aimed at practicing the avoidance of risks based on the second knowledge of situations. Afterwards, students submitted a worksheet as homework, as in the previous course, and confirmed the effects of curriculum improvement.

## COMMON DESIGN FRAMEWORK OF E-LEARNING MATERIALS

Hirabayashi and Matsuda (2011) proposed Figure 1 as a framework for developing game materials to cultivate problem-solving abilities in an Information Studies subject in upper secondary schools. This framework integrated Tamada and Matsuda’s (2004) method of cyber ethics education based on three types of knowledge, with Matsuda’s (2003) method emphasizing the usage of informatics and systematic ways of thinking. Moreover, this framework is similar to the design process of the International Technology Education Association (2007). Therefore, we expected to convert most parts of the framework into teaching materials developed for this study.



**Figure 1**

*Hirabayashi and Matsuda’s (2011) design framework of the e-learning game materials for Information Studies*

In the goal-setting process of Figure 1, students apply “informatics and systematic views and ways of thinking” to analyze and understand the goal and conditions of the presented problem. As the purpose of this process is to understand the problem by collecting information, we did not think it necessary to introduce “technological and systematic views and ways of thinking” instead of “informatics and systematic views and ways of thinking.” In the technical understanding process, students generated various alternatives to solve

problems using domain-specific knowledge. In this study, domain-specific knowledge corresponded to technological knowledge. However, students needed to choose the optimal technology while taking into account company pressures: new technology with a high risk but high return, or stable technology. To improve the trade-off relationship between risks and benefits, they had to consider how to prevent incidents. If problems were anticipated, they examined the technical understanding process and improved the alternatives. Subsequently, they chose an optimal solution by deriving the optimized solution process. After a series of activities, we let students review, self-evaluate, and provide feedback on the evaluation of the system. We decided to revise this framework while adapting the details to the contents peculiar to engineering ethics education.

### DESIGN OF THE TEACHING MATERIALS

#### “Engineer in a Company” Game

The “Engineer in a Company” game was developed to provide students with the first knowledge of situations. Previously, the story within the game only progressed chronologically from design and sales to the outbreak of incidents. The game was developed based on the design illustrated in Figure 2. In this game, each student played four representative roles in a company to experience each applicable dilemma: company manager, engineer, sales staff, and complaints officer. The game featured not only the pressures of human relations, but also the desire for success and promotion in each role. Moreover, in the technical understanding process, we presented a cost-benefit analysis to persuade the company manager and members.

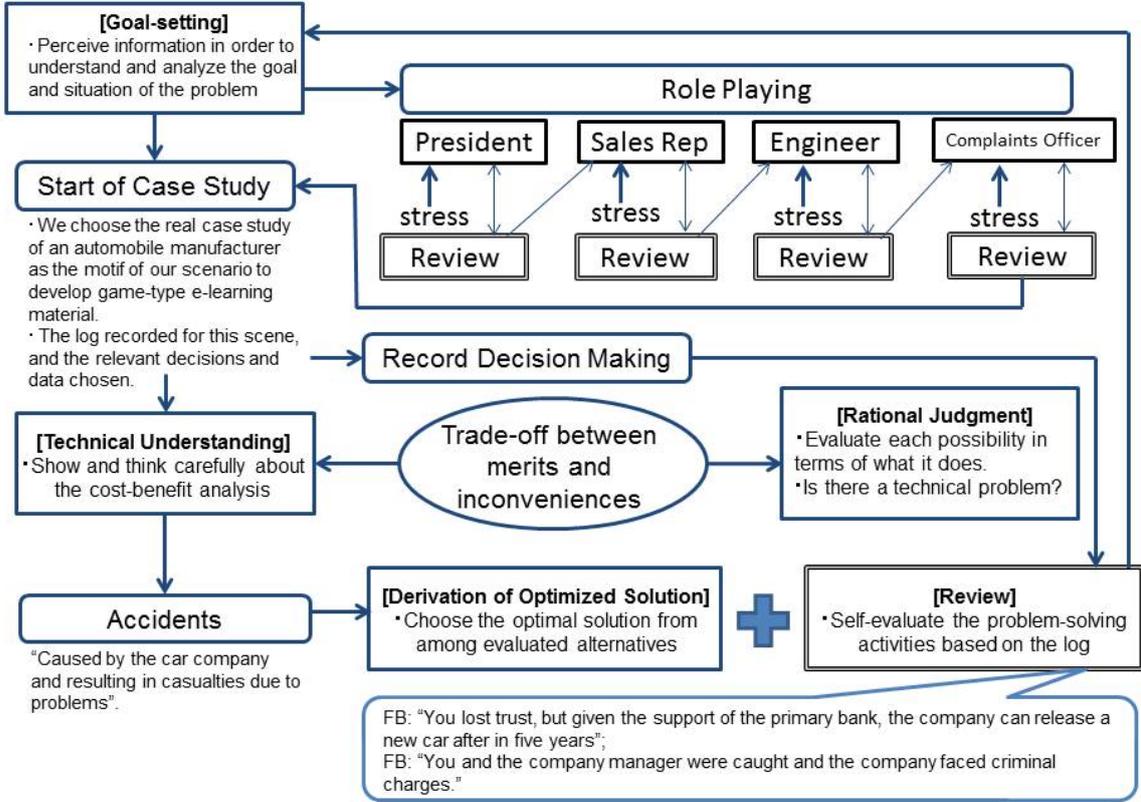


Figure 2  
“Engineer in a Company” game

The case used in this game is based on the fictional 1960s Ford Pinto case. The game begins with an explanation of the company's deteriorating situation due to the pressure exerted by the small car industry in Japan. At this point, students examine how engineers are perceived in society, which expects much of them and places a huge responsibility on them. During the goal-setting process, students experience four different roles in a company. As mentioned above, they take on the different roles by rotation and review their experiences of being a company manager, sales representative, engineer, and complaints officer. They were asked to make their own decision regarding the automobile sales, while considering how consumers would judge their decisions. Afterward, it became clear that a defect was found in the car under current development. Each student was thus required to make a decision as an engineer as to how to treat the defect, with the decision being recorded. In the next scene, an incident occurs. However, the identified defect does not manifest unless the car is hit from behind. In the technical understanding process, the game presents the result of cost-benefit analysis and prompts students scrutinize the trade-off between profit and safety. Through discussions in the rational judgment process, with questions such as "Does any technical issue exist?", students had to derive the optimized solution. They then decided whether to continue with the sale of the car despite the defect or to repair it at their own cost. After arriving at the optimum solution, the story unfolds with many incidents taking place whereby cars burst into flames followed by related lawsuits. Subsequently, the students undertook a simulation exercise to discover what happened to the company. At this point, the outcome differs based on the previous decisions made and recorded. In the reflection process, regardless of the pressure in the company, the right decisions need to be taken from a technical perspective, or otherwise, consumers turn their backs on the company.

### ***"Acquisition of Technology Literacy" Game***

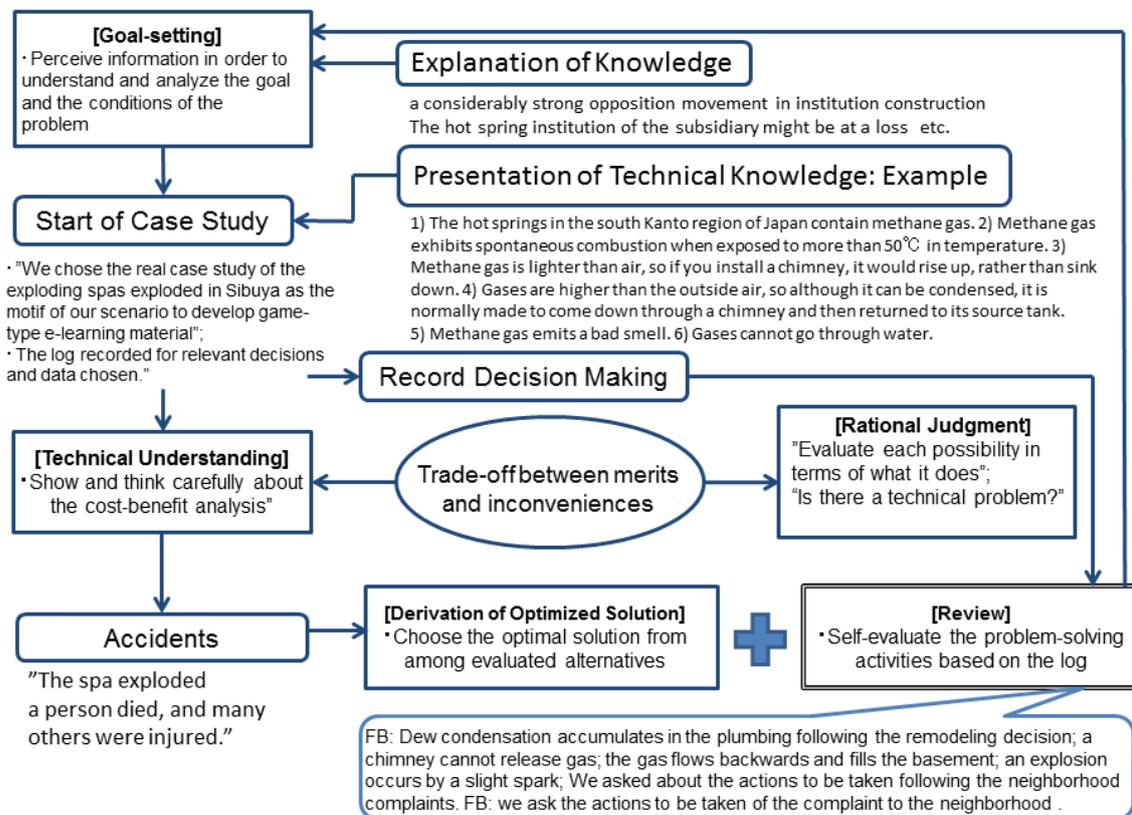
This game was newly developed for the second knowledge of situations. Technological and systematic views and ways of thinking, such as "generating ideas to foresee by a problem," "collecting information to avoid a problem," and "scientifically analyzing information and logically inducing a conclusion," are necessary attributes of engineers. In this game, we attempted to show the second knowledge of situations in the technical understanding process, and therefore, we adopted Figure 3 as the design framework following Figure 1.

The game scenario was a fictitious case study, modified from the "Exploding Spa Case in Sibuya." In the goal-setting process, the game begins with the following explanations: "There was a considerably strong opposition movement in the spa construction industry"; "Since the subsidiary of the spa company has a deficit, it wants to reduce costs as much as possible"; "The management of hot spring pumping is outsourced." In the technical understanding process, the game presents the following technical knowledge:

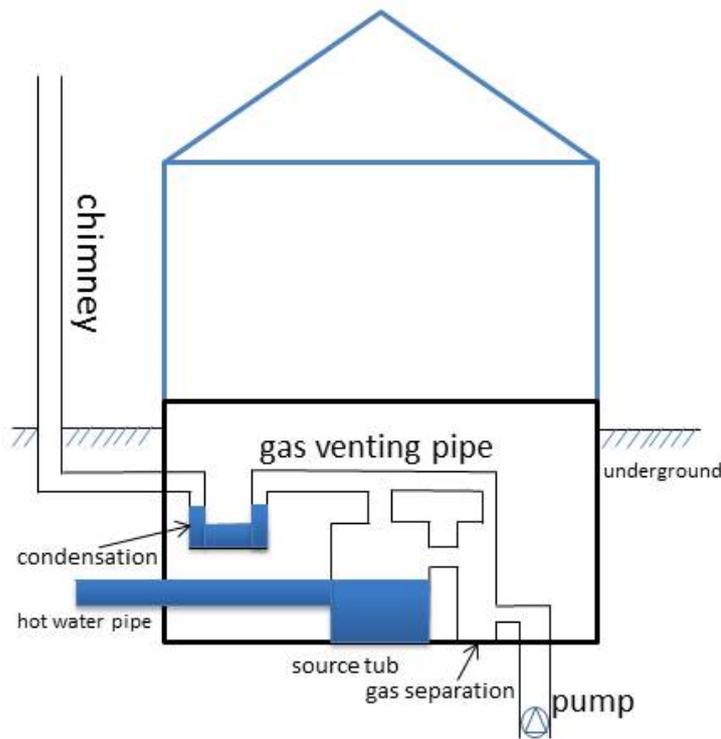
- 1) The hot springs in the South Kanto region of Japan contain methane gas.
- 2) Methane gas exhibits spontaneous combustion when exposed to temperatures exceeding 50°C.
- 3) Methane gas is lighter than air, so if a chimney were installed, the gas would rise up rather than sink down.
- 4) Although methane gas may be condensed because it is warmer than the outside air, it is normally made to descend a chimney and then return to its source tank.
- 5) Methane gas emits a bad smell.
- 6) Gases cannot pass through water.

In the next scene, a complaint was received about smells from the neighborhood, and the company decided to change the position of a chimney, moving it from the proximity of the neighboring houses to a higher position. To do this, the manager proposed to undertake the construction work not with the original design company, but with a cheaper repair company to redesign the chimney as in Figure 4. Here, the game presents cost-benefit analysis and prompts students to examine it closely while considering profit and safety trade-off. After considering a rational judgment process, students were asked to determine whether to conduct the

reconstruction according to the optimized solution process, while referring to their discussion in the rational judgment process. If they agreed to the reconstruction, dew condensation would accumulate in the plumbing, the chimney would not free the gas, the gas would flow backwards and fill the basement, and an explosion could accidentally occur with a slight spark. As the result, they simulated what would happen to the company. On the other hand, if students did not opt for the reconstruction, they were asked what actions should be taken in response to the neighborhood complaints. If this game were designed without an engineer underestimating the risk, the accident could be prevented. The students could switch to the correct piping without any cost if the engineers had the technical knowledge. With these teaching materials, students gained a second knowledge of the situations and understood their importance.



**Figure 3**  
 Flow of "Acquisition of Technology Literacy" game



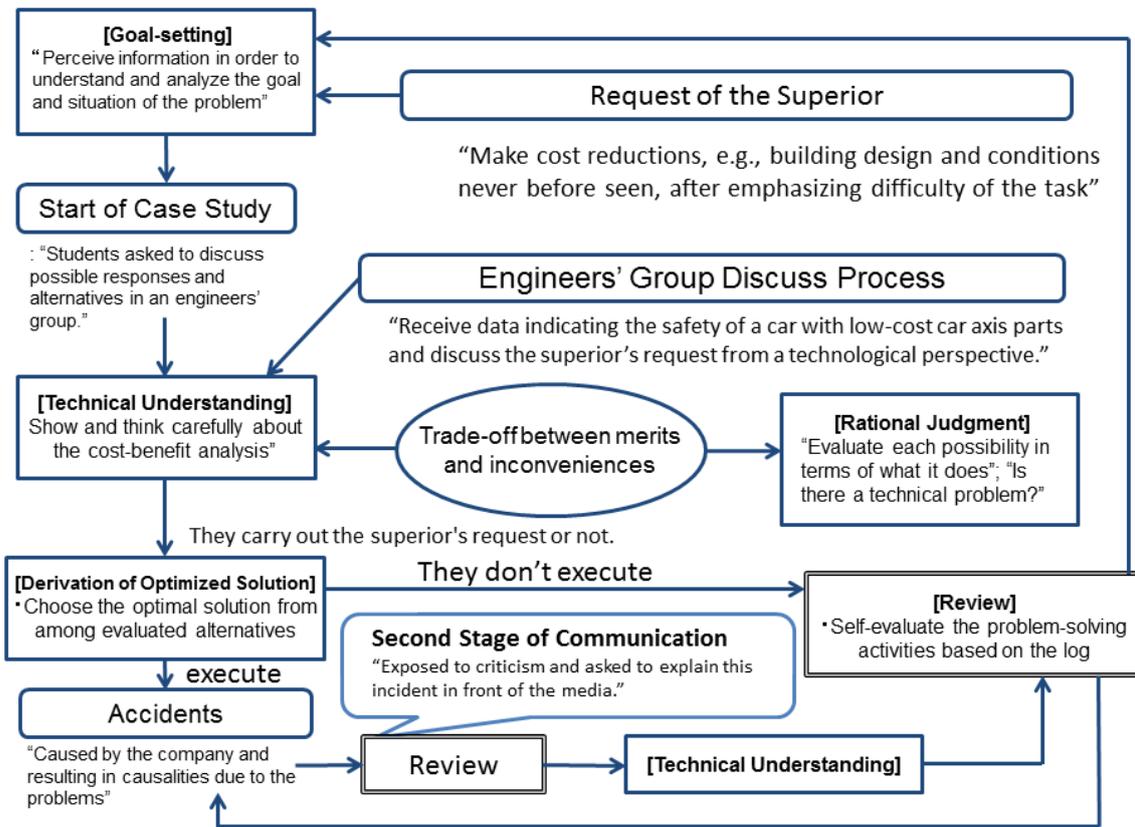
**Figure 4**  
*Accident: Spa explosion in Sibuya*

***Judgment practice in Science and Technology Communication***

Both of the judgment practice games were developed, leading to the constitution of Figure 5 based on the framework of Figure 1. This game was based on a fictional case using the motif of the “Mitsubishi Motors’ 2002 Recall Case” to create new judgment practice materials with Endo and Matsuda’s (2012) contents. Instead of explaining the story in chronological order, the game prompted students to perform problem solving according to the framework illustrated in Figure 1.

In the goal-setting process, a student as an engineer of company “M” was asked to decide whether to accept the request of a superior to make cost reductions. In addition, the recall would lose consumer’s trust in the company and be an immeasurable loss. This related to a recall cover-up. Thereafter, students were asked to discuss the possible responses and alternatives in an engineers’ group. In the technical understanding process, they received data indicating the safety of a car with low-cost car axis parts and discussed the superior’s request from a technological perspective.

Through the discussion in the rational judgment process, they were asked to determine whether to carry out the superior’s request or not. If they did so, people would be injured or die in accidents caused by the car’s axis or wheels falling off. They would be exposed to criticism and asked to explain this incident in front of the media. This was the second stage of communication. In the reflection process, they reviewed the situation and held another technical discussion on whether this result was predictable at the first discussion. If they could predict the problem, the game moved to the results section, but if they could not, they would go to the problem outbreak scenario. In this game, the students realized the attributes necessary in the situation, the knowledge required in advance, and the necessity of communication knowledge. We guided students to the conclusion with the two knowledge situations without covering anything up, and through technical knowledge and its practical uses, students were able to avoid the problem before it occurred. In short, this game uses a real case’s motif and judges whether students can make the correct decision based on the three types of knowledge.



**Figure 5**  
*Constitution of judgment practice*

### ***Dilemma Check Game***

The game scenario was a fictitious case based on the 1977 “Crisis of Citicorp Tower.” The contents of the game were based on the dilemma check game by Katto et al. (2012). The purpose was to prompt students to consider what is necessary to avoid a dilemma situation.

In the goal-setting process, the construction manager asks the company manager for the design and conditions of a building that no designer has ever seen. After emphasizing the difficulty of the task, the system asks the student whether to undertake the design as an engineer. As this game emphasizes the importance of learning “technological abilities,” in the case of choosing not to undertake the work, the system provided the following feedback: “because another engineer constructed the building, you have lost trust.” Moreover, we supposed the case in which students undertook work. They confirmed the laws established in the country where they were to undertake the work and then continued to the next scene.

In the technical understanding process, students considered what they needed to do to design the building, while meeting the constraints to avoid part of a church. In this scene, we emphasized that many alternatives were inapplicable and thus narrowed the solution down to the real case. In addition, we let students confirm that the design met the safety level of the country. With this in mind, they receive the advice from a senior engineer that “new risks would be introduced when using a new technology.” In the next scene of a meeting in the company, the system asked students to make a decision as to whether to begin construction after confirming that their designs met the safety standards of the country.

In the rational judgment process, students inquired into whether there is any technical problem or not more

closely.. Moreover, in the derivation of the optimized solution process, the optimum solution was derived. The building was built, but during the construction process, a problem arose. The game transited from the risk-prediction scene if students chose to stop the construction. Because they did not consider the diagonal wind affecting the building in the problem occurrence scene, they understood that there was the risk that the building would collapse in the event of a hurricane occurring once every 30 years. The engineer would lose his fame if the problem were announced, and at the same time, compensation for possible damages would have to be paid; therefore, students had to choose whether to conceal the problem or make a decision. The expansion of the story finishes here and transits from the scene warning about such a dilemma. Students reexamined the risk of the building as the technical understanding process. The game then transits from the result if they notice that it is dangerous “to consider only vertical wind,” but they return to the problem occurrence scene if they do not notice it, and the building is built. In the resulting scene, the game praises the student who did not cause a dilemma, with the game then finishing. In other words, in this game, we assessed whether right judgment is possible using three types of knowledge in a situation based on a real case study.

## **SUMMARY AND FUTURE PERSPECTIVES**

This research presented an understanding that the true purpose of an engineer is to take precautions against incidents and accidents through learning technological knowledge, technological views and ways of thinking, and the attitudes necessary in the profession.

In addition, traditionally, we used to cover cases and incidents that had occurred in real life. However, this can also cause inconsistencies with what is learned in order to gain knowledge of situations. Therefore, we designed fictional incidents to be used during teaching. The reason for this is that general incidents are just examples of failure. An experience on learning the actions to be taken and failed in is not necessary. An experience that does not fail is necessary. In addition, the game that we developed in this study was not yet in practice. We would very much like to consider putting this game into practice in the future.

## **ACKNOWLEDGEMENTS**

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Here is my information for consideration for a POSTER at the HICE conference in January.

Title: A Model For Developing Interculturally Aware Teachers

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**ABSTRACT:**

The need to graduate well-prepared teachers to staff our culturally diverse and globally connected classrooms is of significant concern to all US teacher education programs. A model is presented in this poster for supporting intercultural field experiences that includes modeling culturally responsive teaching in the college classroom, introducing skills to learn about one's own cultural identity and that of others, and leading reflective classroom discussions. These activities, coupled with intercultural field experiences whether internationally or in US cultural minority communities can dissolve pre-service teachers' misconceptions and stereotypes and develop increased intercultural awareness by enhancing students' knowledge, skills and dispositions about cultural diversity. These activities assist in the development of interculturally aware teachers who will be effective teachers for global learners in global classrooms.

**PRESENTATION PROPOSAL SUBMISSION**  
**For**  
**Hawaii International Conference on Education**

TITLE: *Our Healing Generation*

TOPIC AREA: Culture, Educational Technology & Alaskan Native Identity Formation

PRESENTATION FORMAT: Paper Session

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ABSTRACT:

Where does ‘our healing’ come from? The voice of the mainstream speaks on ‘best practices’ though it’s actual content is based on ‘non-traditional’ ‘non-indigenous’ ways of being applied to Alaskan Native peoples. How do we respond to our greatest need? That is our healing!

The National Resource Center for American Indian, Alaskan Native, and Native Hawaiian Elders in their paper ‘Establishing Best Practices for Elders’ (Segal, Smith, Easley, Kanaqlak, 2004) suggests “undertaking the physical, socio-cultural and economic factors involved in the life of Alaskan Native Elders. This means creating approaches that are meaningful and acceptable to the population served. Key components mentioned are the involvement of Native staff, ceremony, traditional arts and crafts, individual and group counseling (tundra walks), enhancement of self esteem and involvement of elders to name but a few.

We know that bringing together Youth and Elders serves a greater purpose; conferences such as this and forums such as the Alaskan federation of Natives who addressed the issues below in dialogue form can begin our journey to healing:

“Warriors for a New Era: Challenging Alaska Native Youth to Repower Their World,” is a series of five interactive community forums. During each forum Alaska Native youth are given a chance to voice their opinions and seek the advice of elders and Native youth leaders.

The first forum, held Oct. 19, was called “Ancient Wisdom for Modern Times: Kickin’ it With the Elders.”

(The Northern Light, 2009)

The Alaskan Native Heritage Center Offers a High School Program that provides our at-risk youth (who have had significant trauma experiences and those at –risk of school suspension/expulsion) the opportunities to be steeped in traditional and character building experiences which have been shown to affect not only the acquisition of traditional skills but the growth, development and character of the youth that attend. Programs such as these are undeniably critical to the need we have to provide the ‘best’ for our communities.

How the two aspects mentioned above intersect is what this presentation seeks to respond to. Can the experiences of bringing youth and elders together in such a structured, positive and meaningful way serve as a conduit to ‘healing’ on both sides? Experience and evidence tells us this is indeed not only feasible but occurs within programs such as these through the interaction of teaching and learning; listening and sharing as well as hearing and feeling.

*“When I teach the youth, I am not just sewing and beading; I hear kids talk. They are tired of the drinking; the lack of role models; and they share their stories. Their voice can make us ashamed and can heal us”* (Elder, 2011)

Simultaneously the Cook Inlet Tribal Council (CITC) in addition provide a setting where new educational skills and access to technology through gaming experience provides a context for students to know about who they are.

Schoolyard is a new afterschool educational program for Alaska Native and American Indian youth ages 12–19 that infuses video game design and development into its curriculum to engage students in STEM-related learning.

The goal is to increase middle school engagement, and high school graduation and GED attainment rates, while teaching entrepreneurial employment skills through gaming exploration and development. Connecting students with their culture and heritage is also an important focus of the program.

“Our team is very excited about the opportunity this program will offer our Alaska Native youth, and the positive impact it will have on their lives; Not only are we providing students with the skills and support to keep them engaged with school and get them back on track, we are already seeing an interest in higher education,” (said CITC Youth Opportunities Program Coordinator)

Using the online gaming tool Gamestar Mechanic, students spent Spring Break this year learning to design and create their own video game as they developed skills like critical and systems thinking, creative problem solving, and writing and storytelling—all in a collaborative learning environment.

Schoolyard also teaches students how to use Global Positioning Systems (GPS), and provides field trips in the community, like the Anchorage Museum; the Alaska Native Science and Engineering Program (ANSEP); the University of Alaska Anchorage (UAA); and the Alaska Native Heritage Center.

Specific objectives of this presentation are to hear the *authentic voice* of youth, their counterpart Elders and Master teachers in regards to how the reciprocity of ‘healing’ through the process of learning traditional arts has manifested. Paying close attention to the children’s experience and listening to their needs can be a conduit for change within our community. Our children watch us and learn from us. Their anger; their hurt is ours and can lead us toward healing through the exchange of our uniqueness and the undeniable desire to make differences and strengthen our identity.

Participant outcomes include (I) Learn the perspectives of youth that have participated in the High School Program and their counterpart Elders (II) Hear how ‘reciprocal healing’ has resulted from Youth and Elder interaction (III) Discuss the ‘need’ for increased provision for programs that bring Youth & Elders together for ‘healing’

This session discusses themes revealed from interview and observational data of adolescent’s students within the High School program and the Elders/Master teachers they work with. The themes reveal the capacity for such programs to address what we call ‘reciprocal healing’. Reflections of possible next steps to increase as well as facilitate this, limitations, and future research will be shared.

ACCEPTED ABSTRACT WITH SUBMISSION ID NUMBER 182

**Title of the paper: Nigerian pre-service Science Teachers' Self-perceptions of acquired pedagogical knowledge and skills after teaching practice exposure**

**Topic Area: Science Education**

**Presentation format: Paper Session**

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**ABSTRACT**

*The purposes of this study were to investigate the teaching competencies acquired and those not acquired by science teachers-in-training after exposure to teaching practice. The investigator used a fifty-six item questionnaire, labeled as Perception of the Acquired Pedagogical Knowledge and Skills Scale (PAPS), to elicit information from two hundred and ten pre-service science teachers in south-west geo-political zone of Nigeria. A panel of (5) science educators determined the content validity of the questionnaire. The sample of science education undergraduates were drawn from three (3) randomly selected universities using stratified random sampling technique. The pre-service teachers were required to rate their performance level on each teaching competence on a five-point Likert scale ranging from "high performance level" to "no performance level" with "average performance level" as the pivotal point of the scale. Following that, the mean of each competence item were computed. Any competence statement that had a mean rating of less than 3.00 was considered to be of low performance cadre, since the mean value of the scale was 3.00. The findings of the study indicate that most of the teaching competencies that teachers-in-training have not acquired fall under theme 1 (planning instruction), theme 2 (implementing instruction), theme 3 (evaluating instruction), and theme 7 (integrating technology and media in the classroom). The study also revealed that pre-service science teachers demonstrated proficiency in reinforcing learning, managing classroom, building professional links with colleagues and understanding learners' development. Based on the findings of this study, it was recommended that the principle of collaborative approaches for teacher learning should be incorporated into the teacher training program and that regular follow-up workshops aiming at developing Pedagogical Content Knowledge (PCK) of pre-service science teachers should be scheduled as needs arise.*

**Keywords:** pre-service science teachers' self-perceptions, microteaching, teaching skills, practicum, teacher training programmes

**1. title of the submission (be sure to use proper capitalization)**

Establishing a Learning Support Organization Centered on College Students and Practical Use of a Teaching and Learning e-Portfolio for Tutors

**2. topic area of the submission (choose a topic area from the list at the top of this page)**

- Academic Advising and Counseling

**3. presentation format**

Poster Session

**4. description of your presentation**

This study involved establishing a learning support organization, mainly managed by students themselves, called the “Meta Learning Lab.” This space was devoted to peer tutoring activities geared towards meta-learning (“learning how to learn”) for students. In the preparatory stage of the project, we implemented tutor training and designed the learning space and e-portfolio for self-reflections about tutoring sessions by tutors.

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# **Creating English Comfort Zone for LEP Students**

## Abstract

Extracurricular activities can contribute to help LEP (Limited English Proficiency) students to improve English. Teachers need to create English comfort zone so that students can have more confidence to speak English. The researcher encouraged students to have more chances to meet native speakers and participated in the extracurricular activities. The result of the study showed students became more confident to express themselves in English.

Key words: LEP (Limited English Proficiency), extracurricular activities, English comfort zone, affective filter

## I. Introduction

How can English teachers create comfort zone for LEP (Limited English Proficiency) students? Most LEP students are nervous when they have to communicate in English. It is important for LEP students to break their mental block which hinders communicating in English. It is teachers' job to provide more comfortable environment so that LEP students can express themselves without any burden or mental block.

According to Johnson (2003), in communicative language teaching, language is not merely a set of forms. Language should be used to convey information. Some Korean students have difficulty to communicate in English with native speakers. They have memorized certain forms but they are not good at applying these forms in real communication. English is more than short communication in fragmented patterns. Using fragmented and unnatural recorded conversation, students cannot carry quality communication. In the current society, students should be able to express their thoughts and expressions in English. They need to learn natural communication strategies which can be used in the English speaking countries. To

accomplish these goals, the authentic materials dealing with real life situation can be used to help students. When students are exposed to the authentic and natural environment, their affective filter will be lowered. In this paper, the researcher is going to share how to create English comfort zone for LEP students.

## II. Creating English Comfort Zone

LEP students are supposed to learn better when they are exposed to the English comfort zone. Extracurricular activities using mentoring program, mass media and mobile phones can be used to motivate LEP students. Interdependence hypothesis supports that when students have enough background knowledge through reading books in their mother tongue, they are willing to express their opinion in English. The result of this study will show that students have more positive attitude in learning English when authentic materials are used in and outside the classroom. When English is used as an instrument to share their own culture and their perspective about the world, students can create meaningful small talk and carry successful communication in the real life situation.

Teachers need to encourage students and give positive feedback to the students. Applying Pygmalion effect shows that when the teachers expect positive results from the students, they turn out good result. It is important to have dynamics between teacher and students' power relationship in the classroom. Education means positive change or transformation. Positive comment or feedback by the teacher can influence the students. Since the researcher is teaching lower level of students in academics, the positive relationship with the students plays an important role in the classroom. The role of the teacher is crucial for the LEP students. LEP students lack confidence about themselves. Auerbach (1992) suggests that teachers should facilitate students to discover of their own answers. Thompson (2013) mentions that the teachers should be guide, coach and learning partner.

In 2010, Howon University made one comfortable lounge for students to help their English. In this English comfort zone, students were encouraged to use English only. English comfort zone is a place where students can communicate with native speakers. Various extracurricular activities are conducted in the English café. LEP students also go to the English cafe to practice English. Coffee or other beverages are sold with reasonable price. Students can enjoy coffee talk with native speakers. Students are supposed to send the instructor their photos with a native speaker to prove that they have been to the English café to practice English. There are children's story books, game boards, karaoke machine, and TV in the English café. The following extracurricular activities are held in the English cafe during the spring and fall semesters.

- a) English pop song contest
- b) English essay contest
- c) Debating in English
- d) Basic English class
- e) Story telling contest

It is crucial to provide an environment for students to use English. English Pop Song contest is an effective way to encourage students. When students sing songs in English, they can learn the useful expressions naturally. At the English cafe, native English faculty members take turns to help students every day. Sometimes, students play games with native speakers or get some help from the native English faculty members. By doing these extracurricular activities, students can lower the barrier and learn how to communicate in English. One student who has limited English proficiency said that he was able to use his body language. He was pleased when he was successful to communicate with native speakers. That is the way this student fulfill his goal. When students get across the meaning to the native speaker, they can feel fulfillment. One to one conference with professor helps students to gain confidence.

English speech contest was little bit challenging for LEP students since students felt difficult to write their own stories in English. It was beyond their ability to write something in English. Instead of speech contest, English story telling contest was conducted. Some easy children's stories were provided. It was easier for LEP students because they could practice telling stories in English.

### III. Meaningful Communicative Activities

The following authentic materials can be used to motivate LEP students. Through title of the songs, students can learn useful expressions. Students can have long term memory since the song titles are memorable. When the titles show the meaningful situation, students tend to remember longer and they can use titles of the songs in oral communication and written communication. Even one sentence of the lyrics can be meaningful to the students. The example of the title of songs and movies are as follows:

“I am a woman in love.”

"Friday I am in love."

“I was born to love you.”

“You raise me up.”

“I have a dream.”

“Man of Steel”

“The Dark Knight Rises”

“Iron Man”

“It is complicated”

It will take time to memorize all the lyrics of the song. However, students can learn some lines from the lyrics or libretto of the musicals such as “Miss Saigon” or “The Phantom of the Opera”. When teachers use films or songs in creative ways in the classroom, students can learn English effectively.

The examples of meaningful communicative activities are as follows:

- a. Students can make a movie about school life with a group of four. Group work creates more positive outcome. When students use English as an instrument to communicate, they can expect more meaningful learning. At the end of the semester, students' produced movie can be shared in the classroom. Each group will present their movie about 3-5 minutes. By watching other classmates' work, they can get positive insight and reflect themselves.
- b. Showing inspirational video from YouTube is one of the effective ways to inspire students. There are several inspirational videos available in YouTube. Students can be inspired by the video of Lena Maria who became worldwide singer even though she was a physically challenged person. They can learn valuable lessons about how to overcome obstacles in life.
- c. Sharing Korean culture and Korean wave can be used since students can use their background knowledge about their own culture. Students will have lots of things to share about Korean wave. Since they know about Korean wave well, students feel comfortable to talk about Korean wave in English.
- d. Sharing ethnic food recipe can be used. Cooking is one of the wonderful ways to talk about their own country. Kimchi making can be useful activity. Students can talk about recipe in English. Teachers need to provide some guidelines so that students can keep in the track. As a follow-up activity, ask students to write down the recipe of their favorite food.
- e. Kakao is an application which we can use in the Smartphone. Smartphone can be an excellent tool to study English. There are several useful programs which can be downloaded freely. Students can take advantage of using these applications to improve their English. It is strongly encouraged to use digital gadgets for their development. Smartphone changed the communication style in the 21 century. Students use more phone rather than computer because of the

accessibility. By creating group chat in Smartphone, professors can have direct communication with students. Teachers can use Kakao smart ways to help students.

#### IV. Conclusion and Implication

English comfort zone makes LEP students more comfortable in using English. In this paper, the researchers suggested to create English comfort zone for LEP students. Using extracurricular activities, students will have more chances to use English without any mental block. When LEP students have lower affective filter, they can have more productive outcome. The researcher shared various effective ways to help students. These methods can be modified and used in the classroom. In the further research, it is recommended to provide more specific lesson plans to help students better.

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**Title:** Higher Education Policy in Brazil: Recent Developments

**Topic area:** Higher Education

**Presentation format:** Paper Session

**Description of presentation:** The paper describes the state of higher education in Brazil and discusses its future perspectives and the factors that may limit its ability to improve the quality of higher education. Among the limiting factors, most concerning is the decreasing performance indices of secondary public school students.

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## Higher Education Policy in Brazil: Recent Developments

### Abstract

In recent decades, Brazilian education has grown at a very brisk rate, but many fear that the larger availability of higher (tertiary) education has come at the cost of quality to a large segment of its population. The government has made a serious effort to increase access to education at all levels and has set up a pervasive evaluation system to monitor school performance. This study, therefore, examined factors that affect access to quality education in Brazil. Methodologically, the study looked at data available from government and international sources along with other qualitative data about educational policy. The results showed that 86.7% of pre-tertiary students were going to free public schools, where performance levels have been declining, while 13.3% were going to private schools where performance levels have increased significantly over the years. At the tertiary level the proportions were exactly the opposite: 75% were enrolled in private educational institutions and 25% in public ones. At this level the public tertiary institutions are better than the private. The educational policy is thus still failing to provide quality education to the larger and poorer segments of Brazilian society.

Keywords: Higher Education, Brazil, Quality of Secondary Education, International Comparisons

### Introduction

Brazilian education, particularly in the last decade and a half, has grown at a very brisk rate. The significant increase in the higher education system has provided opportunities for a larger share of the population to enjoy university education. Many, however, point out that the full potential from growth has not been achieved because the larger availability of higher education came at the cost of quality, and many newer colleges are feared to be substandard. This in itself is an important problem; but it is also feared that such substandard schools have a common variable. They tend to be schools where the poorer students are enrolled.

This study, therefore, attempts to answer the question of whether Brazil has been able to provide quality education to all its citizens seeking higher education. Methodologically, the study looks at data available from government and international sources as well as other qualitative data and tries to see whether there is evidence of inequality in higher education. The study is exploratory and as such looks at facts from different perspectives and provides preliminary interpretations.

#### *Basic structure of Brazilian higher education*

For the purpose of this study, the higher education institutions are referred to as Tertiary Educational Institutions (TEIs). With regard to legal status, TEIs can be classified either as public or private. Public TEIs are created and supported by public funds. They exist at the federal, state and municipal levels. Private TEIs are created and funded by private organizations, and can be further divided into for profit and non-profit organizations. The private non-profit TEIs are generally created and

supported by religious and philanthropic organizations. In terms of relative size, the public TEIs are generally larger, followed by the private non-profit institutions, and finally by the smaller private for profit TEIs. The average number of students for each type is shown in Table 1 below. Although small on average, the private for profit TEIs have the largest proportion of enrolled students. By 2008, the for-profit TEIs had roughly half of all students, with the other half equally divided between public and private non-profit TEIs.

Table 1. Distribution of tertiary educational institutions (TEIs) and students by legal status, 2008.

Legal status of TEIs	TEIs		Students		Average # of students
	#	%	#	%	
Public	236	11%	1,273,965	25%	5,398
Private for-profit	1,579	70%	2,448,801	48%	1,551
Private non-profit	437	19%	1,357,290	27%	3,106
Total	2,252	100%	5,080,056	100%	2,256

Note: Data from the Instituto Nacional de Estudos e Pesquisas Educacionais (INEP) 2009, Tables 1.1 & 5.1.

From the perspective of the academic activities carried out in the TEIs, they can be classified into three categories: colleges, university centers, and universities. Colleges are institutions that need to submit a request to the Ministry of Education every time they want to create a new program or expand its capacity. University centers have the autonomy to create new programs or to expand their capacity but do not need to carry out research activities. Universities have full autonomy to create new programs, new campi, expand capacity, but are required to carry out research and extension activities, and to have at least two doctoral programs and four masters programs (Ministério da Educação of Brazil 2010, Art. 3). Universities are the largest among them with an average size of 14.7 thousand students. University centers have an average size of 5.8 thousand students, and colleges have about 850 students on average (See Table 2).

Table 2. Distribution of TEIs and students by category, 2008.

Category of TEIs	Share of total # of TEIs	Share of total # of students	Average # of students
University	8.1%	52.9%	14,676
University centers	5.5%	14.2%	5,811
Colleges	84.9%	32.1%	854
Others	1.5%	0.8%	1,204

Note: Data from INEP 2009, Tables 1.1 & 5.1.

## Significant Growth of Higher Education

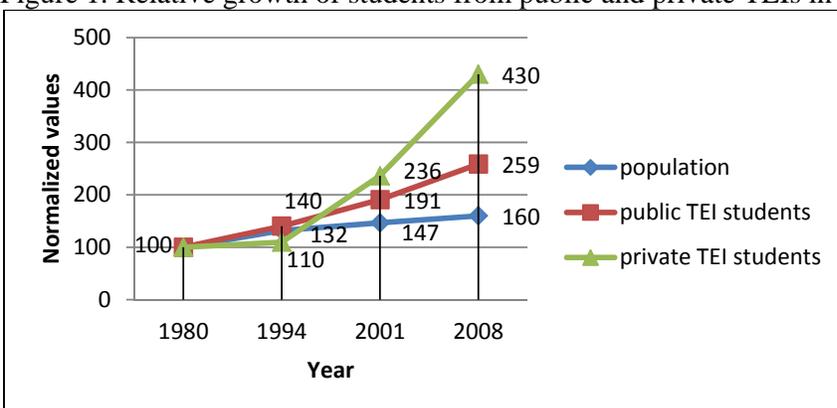
### *Growth of Student Enrollment*

In the late 1980s, changes implemented by the new Brazilian Federal Constitution of 1988 demanded that government spending on education should represent at least 18% of the annual budget of the Federal Government and at least 25% of the State and Municipal Governments (Presidência da República 1988, Art. 212).

In the public higher education sector these Constitutional changes showed positive impacts, ensuring the expansion of enrollment opportunities in public colleges. Figure 1 below shows a 40% increase in enrollment at public TEIs from 1980 to 1994, slightly above the 32% population growth.

The overall student enrollment, however, rose by only 21% due to a very small increase of 10% of private TEIs over the period. Actually, the number of TEIs had declined by 4%, from the normalized value of 100 to 96.

Figure 1. Relative growth of students from public and private TEIs in Brazil – 1980-2008

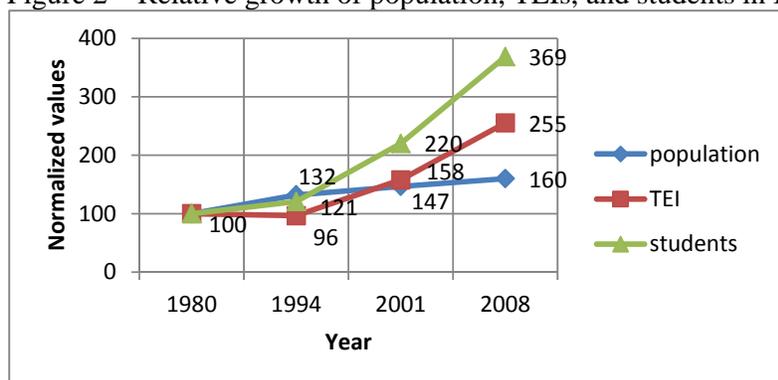


Notes: 1. Values normalized to 100 in 1980.

2. Data from the Instituto Brasileiro de Geografia e Estatística of Brazil (IBGE) 2008; INEP 2000 & INEP 1995-2009.

Only after 1994, with the end of hyper-inflation, initiatives for education finally started bearing some fruit. Since then, student enrollment more than tripled, and the number of TEIs more than doubled (See Figure 2).

Figure 2 – Relative growth of population, TEIs, and students in Brazil.



Notes: 1. Values normalized to 100 in 1980.

2. Data from the Instituto Brasileiro de Geografia e Estatística of Brazil (IBGE) 2008; INEP 2000 & INEP 1995-2009.

### *Public vs. Private TEIs*

Table 3 below shows that, while the share of public TEIs and their students grew from 1980 to 1994, it decreased sharply after that. From 1994 to 2008, the public TEIs fell from a quarter to one tenth of the total TEIs, and the number of students diminished from almost half to a quarter of the total number of students. On the other hand, the economic changes brought by the 1994 Plano Real -- which ended more than a decade of extremely high inflation -- set a new period of enormous expansion of the private TEIs. In 2008, they comprised 90% of TEIs, and had 75% of the students in higher education.

Table 3. Share of public and private TEIs and their students - 1980-2008

Year	Shares in # of TEIs		Share in # of students	
	Public	Private	Public	Private
1980	23%	77%	36%	64%
1994	26%	74%	42%	58%
2001	13%	87%	31%	69%
2008	10%	90%	25%	75%

Notes: TEI and student data from INEP 2000 & INEP 1995-2009.

## **Factors Affecting Quality of Higher Education**

### *Government Expenditures on Education*

Table 4 below shows that Brazilian educational expenditures rose significantly from 2000 to 2006, increasing its participation in the GDP by about 50% (from 2.6% in 2000 to 3.8% in 2006). However, Brazil still had one of the smallest shares (4.9%) compared to OECD countries in 2006.

Another notable aspect in Table 4 is that most of this growth came from pre-tertiary education, showing some evidence that the Fourteenth Amendment to the Constitution (Presidência da República of Brazil 1996, Art. 5), passed by Congress in 1996 and requiring that at least 60% of government spending on education be directed to basic education, was showing an impact on increased access to education.

According to the OECD data for 2004, the share of total educational expenditures held by tertiary education was 17.2% for Brazil, smaller than 29 out of 30 OECD countries (OECD 2007, Table B1.2.). In contrast, Brazil spent 73.7% of its resources on primary and secondary education, a share that is smaller than only 2 of 26 OECD countries. These numbers show a clear effort to improve conditions for pre-tertiary levels of education, but if the efforts are going in the right direction why is it that Brazil is still lagging in the Programme for International Student Assessment (PISA) tests? In PISA 2006, Brazil scored around the bottom of the list of 57 participating countries, ranking fourth from last in Math (OECD 2007a, p. 53).

Table 4. Expenditures on educational institutions as share of GDP.

Country	2006			2000			1995		
	Pre-tertiary education (%)	Tertiary education (%)	Total (%)	Pre-tertiary education (%)	Tertiary education (%)	Total (%)	Pre-tertiary education (%)	Tertiary education (%)	Total (%)
Brazil <sup>2</sup>	3.8	0.8	4.9	2.6	0.7	3.7	2.6	0.7	3.7
Japan	2.8	1.5	5.0	3.0	1.4	5.0	3.1	1.3	5.0
Korea	4.3	2.5	7.3	3.6	2.3	6.4			
Mexico	3.8	1.1	5.7	3.5	1.0	5.0	3.7	1.0	5.1
Portugal	3.6	1.4	5.6	3.9	1.0	5.4	3.6	0.9	5.0
United States	4.0	2.9	7.4	3.9	2.7	7.0	3.8	2.3	6.6
OECD mean for 24 countries	3.6	1.4	5.5	3.5	1.3	5.2	3.7	1.3	5.4

Notes: 1. Data from Organization for Economic Cooperation and Development (OECD) 2009, Table B2.1.

2. Data for Brazil is only for public expenditures.

One explanation is that, compared to OECD countries, Brazil has a very small fraction of its students in the tertiary educational institutions (TEIs) and a relatively large proportion in pre-tertiary education. In 2004, only 2.6% of all Brazilian students were in TEIs. These proportions for the OECD countries ranged from 7.5% for Mexico to 28.8% for Greece (OECD 2007, Table B1.2.). As a result, tertiary education in Brazil (represented in these statistics only by public TEIs) actually received a disproportionately larger amount of resources per student than pre-tertiary education. For instance, on a per student basis, Brazil spent US\$ 8,903 per student in tertiary education, while

spending only US\$1,033 per student in secondary education, and US\$1,159 per student in primary education. When compared to the OECD countries, only Turkey (US\$1,120) spent less than Brazil in primary education. In secondary education, even Turkey (US\$1,808) with the lowest per student expenditure among OECD countries spent almost twice as much as Brazil. In the tertiary education (excluding R&D activities), Brazil spent US\$8,903, a per-student amount that is only smaller than six OECD countries (OECD 2007, Table B1.1a.).

Therefore, when expenditures per student are considered, the situation of Brazilian public pre-tertiary education is found to be wanting, while public tertiary education is striving and receiving resources at a level competitive with the highest investing OECD countries. This may help explain why it has lagged so seriously in PISA tests, while performing well in scientific production. According to data collected from Thomson Reuters by the Ministry of Science and Technology of Brazil, Brazilian world share of articles indexed by Thomson doubled from 1.35% in 2000 to 2.63% in 2008 (Ministério da Ciência e Tecnologia of Brazil (MCT) 2009, Table 5.5.).

#### *Improvements in the Evaluation System*

During the early 1990s, public TEIs were a source of concern, because there was a perception of lack of accountability in their use of resources. First of all, they were structured in such a way that they did not need to respond to any external public scrutiny. For instance, in an interview to *Revista Estudos Avançados* in 1992, Roberto Lobo, then the Rector of São Paulo University, mentioned that the collective body comprised of the professors in a department had complete power to run the department any way they wanted. As a result, departments were too often run in the interest of the professors and not of the students or the society at large (Lobo 1992).

Another example of self-serving behavior was described by Rondon when the State of São Paulo decided to grant autonomy to the state public universities by the 1989 amendment to the State Constitution. Nine years later, in 1998, at the State University of Campinas, the most notable result of giving autonomy was the drastic change in the ratio of wage payments to total expenses which grew from 64.4% in 1989 to 91.8% (Rondon 2002, p. 119).

Responding to such concerns, Congress enacted the law instituting the National Exam for Undergraduate Programs (ENC) in 1995. The ENC was a mandatory national test for all college students graduating in a specific year. The average of the student grades would represent the grade of the particular Program, which after sorted in decreasing order, would “neatly” rank all institutions from A to E, according to the following distribution: A (top 12%), B (next 18%), C(next 40%), D(next 18%), and E (bottom 12%).

The ENC shook up the Brazilian universities and their students. For various reasons, there was significant and lasting resistance to the exam. Even in 2001, five years after it was started, there was much discussion about boycotting the exam (FolhaOnline 2001). A study by the Instituto Nacional

de Estudos e Pesquisas Educacionais (INEP), analyzing data from 1997 to 2004 (which was the last year ENC was administered), concluded that the rate of absence was small, ranging from 5.4% to 9.2% during the period. According to these authors such small numbers suggested that, in spite of much hype in the media, there was no evidence of boycott in the exams (Leitão et al. 2010).

The boycotting, whether large scale or not, was only one of the problems. Some institutions began to act strategically, offering prizes to those who had gotten the best grades or giving tuition discounts (FolhaOnline 2001a). Private universities continued to argue that solely evaluating institutions on the basis of student scoring ability on a standardized test could not measure the “value added,” i.e., the learning being provided by the institution that took in a relatively weak student.

In 2004, a new system with a broader and more diverse vision of evaluation was set up. The National System for the Evaluation of Higher Education (SINAES) was established on April 14, 2004 (PRB 2004), and evaluated institutions from several perspectives as indicated in Table 5 below. Each of these dimensions received a score, which would lead to a final institutional score known as IGC and classified TEIs in 5 groups ranging from 5 (excellent) to 1 (poor).

Table 5. Criteria for evaluating tertiary educational institutions (TEI)

Criterion	Weight
Mission and the Institutional Development Plan (PDI) <sup>1</sup>	5
Description of main internal norms and actions to improve teaching, research, and extension activities	35
Social responsibility by improving access to the poor and disadvantaged, enhancing protection of the natural environment, stimulating the preservation of culture and encouraging the arts	5
Communication with society	5
Policy on career path for faculty and non-faculty positions	20
Governance, particularly with regards to independence of the institution from the owners and representativeness of collective bodies for decision making, such as faculties in academic departments	5
Physical infrastructure for teaching and research, libraries, and communications and information infrastructure	10
Planning, implementation of self-evaluation processes and utilization of the results.	5
Student services	5
Financial sustainability, particularly regarding its ability to continue providing educational services.	5

<sup>1</sup> The Institutional Development Plan is a document describing the mission, the strategy, the organizational structure, the pedagogical approach, the action plan, the profile of professors, the infrastructure, and any relevant aspect that shows a sound plan for financial sustainability of the institution. It should be updated frequently and should cover a period of five years.

Note: Summarized and adapted from INEP (2010).

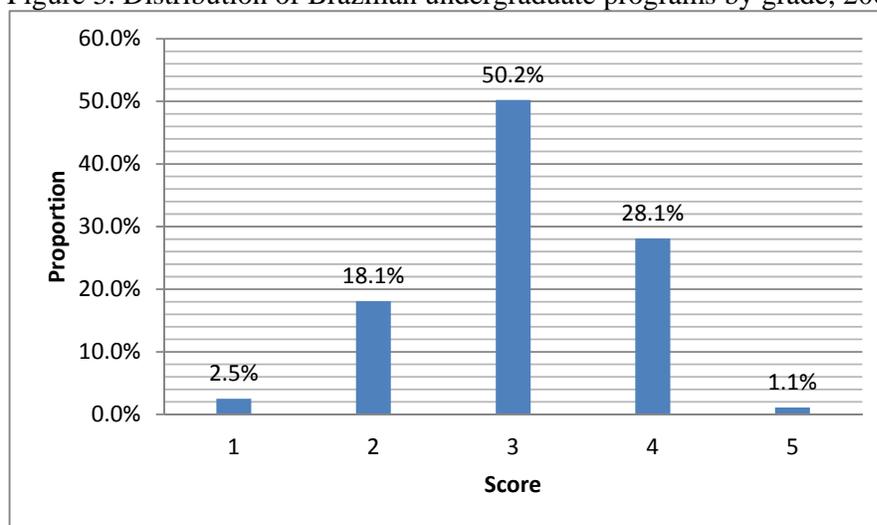
The SINAES also evaluates individual undergraduate programs (referred to as Courses in Brazil). Each program is evaluated by an index called Preliminary Course Grade (CPC) comprised by the weighted combination of eight indicators measured from three sources: i) the faculty registry at the Ministry of Education; ii) the student opinion survey; and iii) the student grades in the National Student Performance Exam (ENADE). The eight indicators and their respective weights are shown in Table 6. Results from the evaluation carried out in 2008 are presented in Figure 3.

Table 6. Indicators used to calculate the preliminary course grade and their respective weights.

Source	Indicator	Weight
Faculty registry at Ministry of Education	Percentage of PhD degree holders	20%
	Percentage of Masters or higher degree holders	5%
	Percentage of full-time faculty	5%
Student Opinion Survey	Physical infrastructure	5%
	Structure and content of syllabi	5%
Student grades in the National Student Performance Exam (ENADE)	By seniors	15%
	By freshmen	15%
	Difference between Expected and Observed Performance	30%
Total		100%

Note: Adapted from INEP (2009).

Figure 3. Distribution of Brazilian undergraduate programs by grade, 2008



Note: Data from INEP (2009, p. 11).

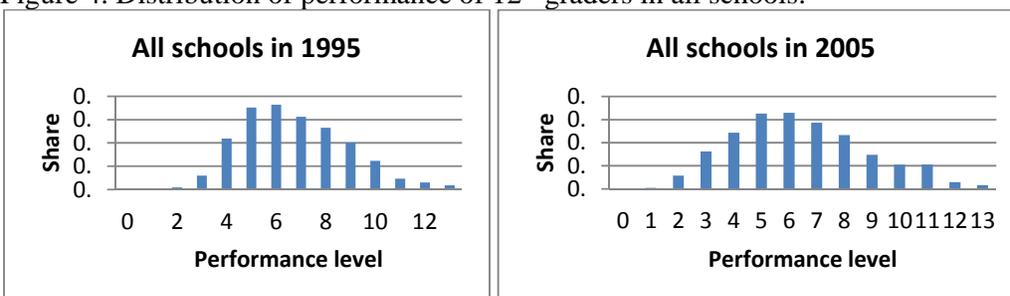
### *The Quality of Students Entering Tertiary Education*

In addition to reasonable amounts of government financial resources for higher education, a key input to a productive educational system is the students themselves.

Aware of this simple and fundamental principle, the Ministry of Education started in 1990 a voluntary evaluation system for all pre-tertiary students in the country under a program called SAEB, a type of National System for the Evaluation of Pre-Tertiary Education. The main tool is a biennial standardized test covering Portuguese language and Mathematics. The test is offered to students studying in grades 5, 9, and 12. (INEP 2007).

SAEB results are classified into 14 performance levels (0-13). Figure 4 shows the distribution of grades throughout the 14 performance levels for all schools in 1995 and 2005. There are some differences between the two distributions, for example, the 2005 distribution is flatter, and its bars representing performance levels 2, 3, and 10, are slightly taller. In order to make comparisons easier, exam results from 1995 to 2005 were transformed into a single index by calculating the weighted average for each year, with the weights being the fraction of students at each level (See Figures 5 to 7).

Figure 4. Distribution of performance of 12<sup>th</sup> graders in all schools.



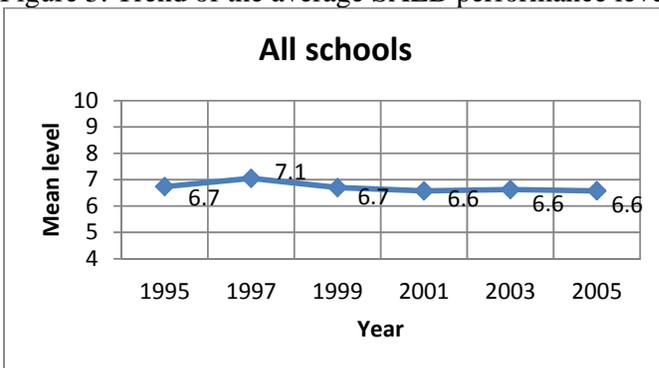
Note: Data from INEP (2011).

The indexes show that average performance in all schools increased significantly in 1997, but then decreased back to 6.7 and remained constant at 6.6. This decrease followed by stability at such a low level is not a desirable result for the Brazilian education system. One would normally expect that, as time passes, the average performance level to go up.

An even greater concern, however, is the steady fall of the performance level in public schools as featured in Figure 6.

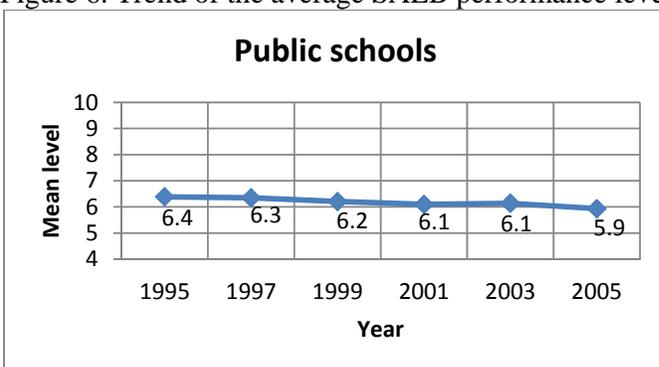
Finally, and one could say “as expected,” private schools have recorded an outstanding degree of improvement starting from an average index of 7.8 in 1995 and posting an impressive 10.4 in 2005 (See Figure 7).

Figure 5. Trend of the average SAEB performance level in all schools.



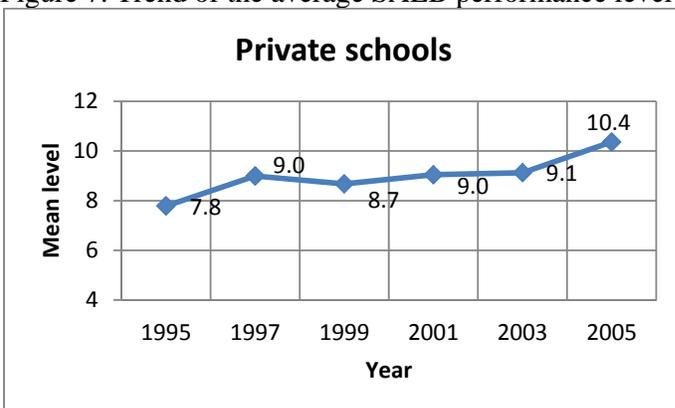
Note: Data from INEP (2011).

Figure 6. Trend of the average SAEB performance levels in public schools.



Note: Data from INEP (2011).

Figure 7. Trend of the average SAEB performance level in private schools



Note: Data from INEP (2011)

Table 7. Number of pre-tertiary students and shares of public and private institutions

Year	Number of students			Share (%)	
	Total	Public	Private	Public	Private
1994	43792803	37447623	6345180	85.5%	14.5%
2001	55950424	48963054	6987370	87.5%	12.5%
2008	53232868	46131825	7101043	86.7%	13.3%

Notes: Data from INEP (1991-2009).

When this evidence is linked to the relatively small per-capita public expenditures on pre-tertiary education, as discussed earlier, it appears that the educational policy is seriously failing to provide quality education to the larger and poorer segments of Brazilian society.

Table 7 sheds more light on the issue. Table 7 shows that only a small fraction (13.3%) of Brazilian pre-tertiary students are studying in private schools, and Figure 7 shows that these private school students are recording an impressive growth in their performance level over the past four exams (Figure 7).

Private high schools are expensive in Brazil, with tuition rates ranging from US\$9,000 to US\$18,000 a year, far more expensive than the tuition of most private colleges and universities. The larger fraction of pre-tertiary students (86.7%) goes to free public schools. In contrast, the larger fraction of tertiary students (75%) goes to private colleges and universities. There, fierce competition in the last 10 years has brought prices down. In the field of social sciences, tuitions start from US\$2,000 a year, and only courses requiring expensive facilities and labs such as Medical Schools, would charge tuitions as high as US\$22,000 a year. The lower prices have been achieved by improved efficiency by large educational business groups that have standardized facilities, content, produced their own text books, and streamlined teaching procedures. The cost efficiency strategy has shown to be very successful and many business saw TEIs as good investment opportunities, rather than as institutions chartered to play an important social role. In mid 2007, the Grupo Anhanguera, with 53 thousand students, successfully raised US\$273 million<sup>2</sup> in their Initial Public Offering (IPO) at the São Paulo Stock Exchange (Almeida 2008; Yokoi 2007). By the end of 2007, three other large TEIs, Kroton (195 thousand students), Estácio de Sá (185 thousand students), and SEB (69 thousand students in 2010), had together raised an additional US\$464 million (Instituto Metodista de Ensino Superior 2008; Jornal Brasil Online 2010).

Ironically, the smaller but better prepared proportion of students (25%) can receive the best tertiary education at the federal and state financed universities, which are funded at the level of the best

<sup>2</sup> R\$512 million in local currency at the rate of 0.5341US\$/R\$ on July 14, 2007 using ten-year currency converter from Bank of Canada (<http://www.bankofcanada.ca/en/rates/exchform.html>) on July 23, 2010.

OECD countries, and are completely free of charge for the students. The latest results available from the Ministry of Education ranking all 180 universities in the country show that all the top ten universities are public. Among the top 50, 45 are public and only 5 are private. Although the distribution of public and private universities is fairly balanced, with 92 public and 88 private, the ranking shows that the public free of charge institutions are the best ones in the country. With such great conditions at public TEIs, there can be little doubt that the best students will always choose the better public universities.

In a sense, this apparently odd configuration is actually very logical. Students coming from a free public pre-tertiary educational system, which have lower performance levels, will not be able to join the very selective and competitive public colleges. As a result, they will have to go into the private college system, which due to cost competition has become financially more accessible, but tends to have less qualified professors, standardized content, and limited infrastructure. The outcome is logical but the result is socially undesirable.

### **Partial Conclusions**

In the last two decades, the government has made significant efforts to improve the educational system. On the one hand, it is undeniable that there was a huge increase in enrollment in TEIs, meaning that a larger proportion of society obtained access to higher education. It is also true that the government has implemented better evaluation systems at all levels of education, which has forced educational institutions to make efforts to improve the quality of teachers and the infrastructure in general. The evaluation system, however, has not solved the problem of unequal outcomes that seem to be produced by a flaw, embedded in the system, which is the enormous privilege given to public TEIs that are fully funded by public resources and can thus provide better infrastructure and better professors for free. The result is an educational sector dominated by a large for profit segment providing standardized educational content, and a small publicly funded high quality research intensive segment. It is hoped that this exploratory discussion on the current situation of the Brazilian educational sector can stimulate further studies looking at the causes of the unfair structure favoring wealthier segments of the population.

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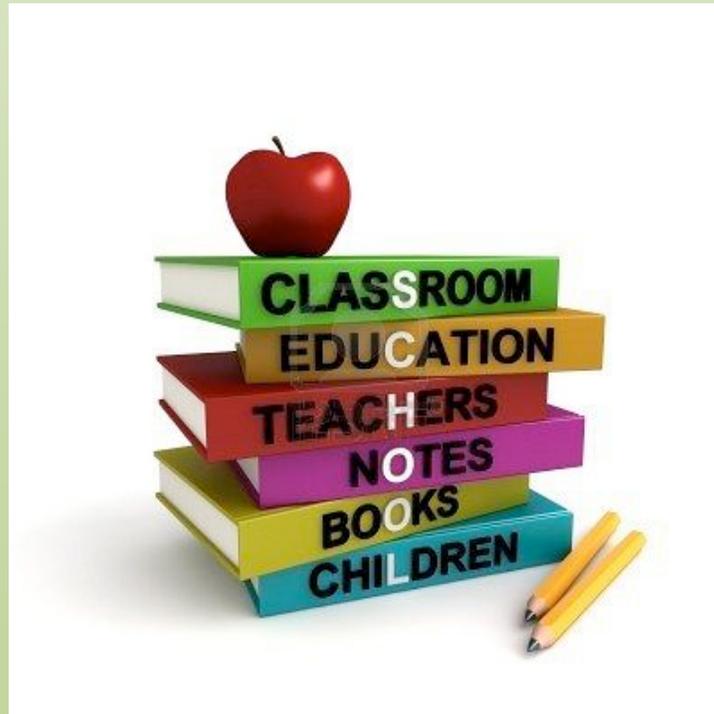
# ***Beginning Teachers Initiative***

*Rocky View Schools 2012-2013*

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**Facilitator: Beginning Teachers' Initiative**



## Abstract

This action research paper will outline the development, implementation and evaluation of the Beginning Teachers Initiative in Rocky View Schools in Alberta, Canada. This program has evolved over the last three years into a powerful professional learning opportunity for beginning and pre-service teachers. The program aims to build the bridge between university experiences and the practical day-to-day application of teaching and learning theory. Supporting beginning teachers is imperative as schools and classrooms transform into 21<sup>st</sup> century learning environments. This program allows for tangible and timely support not only at a school level but also at a district level. This paper also looks at how the development of social networks and professional capital in new teachers can lead to powerful learning outcomes not only for the teachers themselves but also for the students they teach.

## Introduction

Whenever you ask an educator about the level of support they received in their first few years of teaching, many say that there was little to none. Often, teachers in their formative years were left alone to struggle with the complexities of the classroom. As educators, we intuitively know that without a collaborative and supportive network, beginning teachers are often overwhelmed and frustrated. As Bower (2012) suggests, “Teachers eat their young”. (Bower, *Teachers eat their young*, <http://www.joebower.org/2012/05/teachers-eat-their-young.html>, May 8, 2012) We tend to give the beginning teachers a challenging timetable, challenging students, and make them ‘sink or swim’ with little to no support. Bower comments, “A teacher who is responsible for more than 100 students in a day isn’t really teaching anymore – they’re doing crowd control” (Bower, *Teachers eat their young*, <http://www.joebower.org/2012/05/teachers-eat-their-young.html>, May 8, 2012) These beginning teachers often lose their initial love for teaching and for children. As a result of this neglect, between one third and one half of the teachers, who begin teaching, leave the profession within five years. Granted, there ~~potentially~~ could be other factors that influence the decision to leave like higher paying opportunities elsewhere but how many potentially good teachers are leaving because they were simply left to struggle on their own?

Intuitively, as educators, we know there is a problem in continuing with this lack of support for beginning teachers. As Hargreaves and Fullan (2012) suggest, “Teaching is at a crossroads: a crossroads at the top of the world. Never before have teachers, teaching, and the future of teaching had such elevated importance. There is widespread agreement now that of all the factors that affect children’s learning and achievement, the most important is the teacher – not standards, assessments, resources, or even the school’s leadership, but the quality of the teacher.” (Hargreaves and Fullan, 2012, *Professional Capital: Transforming Teaching in Every School*, Teachers College, Columbia University, p. xii) It only stands to reason then, that the support we give to teachers will transform student learning: the stronger the teacher, the stronger student learning.

Rocky View Schools (RVS) has been a leader in supporting teachers’ and administrators’ professional learning. In 2010, Springbank Community High School set about supporting the beginning teachers within the school with direct mentoring from various staff members including teachers and administration. As a result of this effort the Beginning Teachers Initiative was founded in 2011, where school-based mentoring and division-wide coaching was centralized into one Community of Practice. This Community of Practice was created informally initially to provide a space where beginning teachers could collaborate and commiserate in an evaluation-free environment. Guided by a veteran teacher, the beginning teachers began to make sense of their classroom experience and offer greater learning opportunities for their students. A [Beginning Teachers](#) website was created as a one-stop-shop for a variety of resources allowing the beginning teachers a quick reference guide to many of the ideas that are discussed in their schools and classrooms. As well, through the course of the year, this group quickly bonded into a tight knit cohort and have been providing support to each other through their second year.

In 2012-2013, the program developed further. Beyond the regular three Community of Practice days set by the school jurisdiction, we expanded the program to seven sessions in total. This allowed the beginning teachers to meet on a more regular basis, typically once a month following the school calendar. Not only is the initiative structured to provide beginning teachers with the foundational knowledge of teaching in the 21<sup>st</sup> century and Rocky View Schools but we also had two dedicated teacher coaches,

one with an elementary focus and one with a middle/high school focus. These coaches met the teachers at their schools and in their classrooms on an on-going basis. These coaches were not in an evaluative role. They provided support and coaching to the new teachers in their classrooms.

The goal of the Beginning Teachers Initiative research is to provide tangible support to the new teachers in Rocky View Schools. The objective is to measure whether supporting new teachers, through learning and coaching, can create the conditions where the beginning teacher feels supported, where the retention rate of beginning teachers is high, and where beginning teachers create positive learning environments. One thing is for certain; happy teachers make happy students and with that comes greater student learning. Ultimately as educators, this is our goal.

## **1. Research Questions**

- What is the best practice in supporting beginning teachers?
- How will we know if the Beginning Teachers Initiative has added value to the teacher, student, and Rocky View Schools?

## **2. Beginning Teachers Initiative Program and Process**

Seven collaborative sessions were planned for the 2012-2013 school year. RVS supported the beginning teachers by providing substitute teachers for the sessions outside the regular Community of Practice professional learning days. Figure 1 outlines the agenda for this Community of Practice.

<b>Date/Time</b>	<b>Location</b>	<b>Agenda Items</b>
Friday Sept. 14: 9:00-2:00	Springbank Community High School (Learning Commons)	<b>Orientation:</b> - Introduction to Beginning Teachers website (www.beginningteachers.net), twitter #rvsnewteacher, RVS blog, discussion board, Remind 101 - Professional Code of Conduct - RVS Learning Model <b>Speakers:</b> Human Resources (Pat), Learning (Manny), 21 <sup>st</sup> Century in RVS (Dave), Literacy Coach (Melanie)
Fri. Oct. 5: 8:30-2:00	Springbank Community High School (Rm 312)	<b>Marzano's Protocol</b> <b>Planning:</b> UbD <b>Action Research:</b> teacher as researcher
Mon. Nov. 12: 4:30-7:00	Springbank Community High School (Rm 312)	<b>Learning Support</b> (Greg/Rob) <b>Social/Emotional Support</b> (Chris P.)
Mon. Dec. 3: 8:30-3:30	Springbank Community High School (Rm 312)	<b>UbD planning</b> <b>Finding Evidence</b>
Thurs. Mar. 14: 1:00-4:00	Rocky View Education Centre (Airdire)	<b>Inquiry</b> (Barry/Josh)
Mon Apr. 8: 8:30-3:30	Springbank Community High School (Rm 312)	<b>Emotional Intelligence/ Personality Dimensions</b> (Tracy) <b>Administration</b> (Leslie)
Thurs. May 16: 4:30-7:00	Rocky View Education Centre (Airdrie)	<b>Diversity</b> (Theresa Cardinal) <b>Celebrating Success</b> <b>Final Reflections</b>

Figure 1: Agenda for Beginning Teachers' Initiative 2012-2013

Through each of these sessions, we aimed to build the capacity of these beginning teachers. All of the fears and anxieties of organizing, managing, designing, implementing and evaluating their respective teaching programs, we talked about together. We collaborated, worked through problems, gave each other the support needed. Each session added to the learning of the previous and in turn, added to the teaching and learning in their various classrooms. The Beginning Teachers' Initiative was carefully designed so each piece built on the last and was timely in the cycle of a school year.

### 3. Background Information

As we begin to develop schools with a 21<sup>st</sup> century focus on collaboration, one of the important areas is networking. With new teachers to a school division or beginning teachers, many lack the social network that supports their professional growth. In many

cases, this lack of support creates tension and isolation. Teaching (and learning for that matter) is collaborative in nature and without these social ties, can be an overwhelming task. In part, this can be linked to social network theory and the development of human and social capital. Essentially, a beginning teacher will have strong social ties to some colleagues and weaker social ties to others.

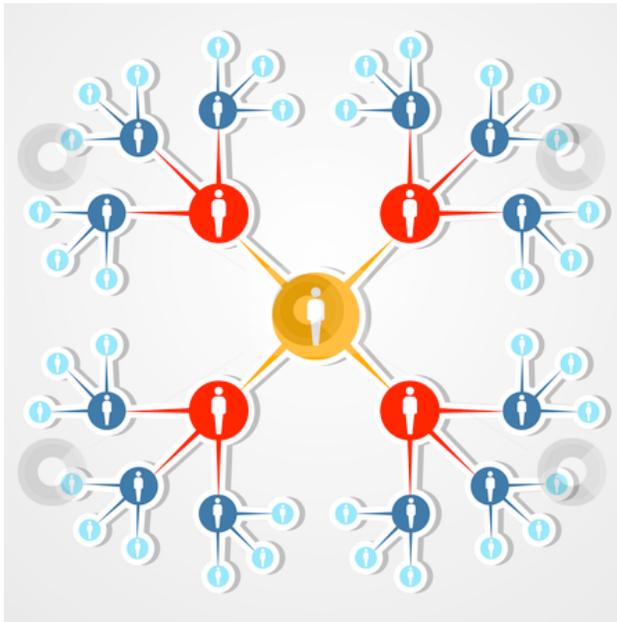


Figure 2: Picture retrieved July 13, 2013 from <http://cutcaster.com/photo/801073107-Social-web-network-marketing-diagram/>

If we look at Figure 2, we can see the power of social networks in teaching and learning. In the centre, lies the student. Student learning indeed, must be the centre of all that we do in education. Circling the student is the beginning teachers. Each serves to support student learning. But the key to this idea is that not only each beginning teacher is also supported by each other, but also mentors, coaches, peers and administrators. If we can create a strong network or web of support, where all work together collaboratively increased student learning will be achieved.

In another way, Figure 2 could be viewed with the beginning teacher at the centre of the network. The close ties are with other beginning teachers, and colleagues. The next layer would consist of other teachers in departments or grade level teams and the third layer consisting of mentors, coaches and/or other educational professionals like administrators or learning specialists at a divisional level. Whichever way you look at the

interactive and supportive web, each teacher or student is supported in their learning at a variety of levels and through a variety of means.

This also can be linked to the development of what Hargreaves and Fullan (2012) suggest is professional capital. The investment in developing and supporting teachers will reap the benefit of increased student learning and greater capacity among all teachers. This is not isolated however to just between teachers or between teachers and students. “If we need much more social capital within our schools – colleague to colleague, peer to peer – we need this just as much across and between our schools. Professional capital as human capital plus social capital is therefore a personal thing, a within-school thing, and a whole system thing.” (Hargreaves and Fullan, 2012, p. 5)

It is vital for new and beginning teachers to start strong. They therefore then must be provided the opportunity to create these strong and weak social ties early in their first year. By creating a formal supportive network in a school and school division, these ties are more easily produced.

Beginning teachers come to the profession from a variety of backgrounds and experiences with their own schooling. Some have entered teaching with an idyllic view of classroom practice. They may have been inspired by a teacher in their own childhood, a Hollywood movie, or simply because they feel they can make a difference. However, when they face the reality of their own classroom with their own students, they can become quickly overwhelmed. In *Workplaces That Support High-Performing Teaching and Learning: Insights from Generation Y Teachers*, the authors suggest there are five facets to a high-performing workplace. They include: Frequent feedback on effectiveness, high quality evaluation, effective instruction technology, differentiated support, and collaborative and shared practice. (Coggshall, J.G., et al, April 2011, *Workplaces That Support High-Performing Teaching and Learning: Insights from Generation Y Teachers: A Report from the American Federation of Teachers and American Institutes for Research*, p. 3) By creating a learning space where beginning teachers can come together to collaborate and share their practice is vital to building their teaching capacity. They note, “...[this is] the most powerful thing that policymakers and others can do is to support teachers’ ability to be effective with their students.” (Coggshall et al, 2009, p.19 as cited in Coggshall, J.G., et.al, April 2011, *Workplaces That Support High-Performing*

*Teaching and Learning: Insights from Generation Y Teachers: A Report from the American Federation of Teachers and American Institutes for Research*, p. 7) If we can create, as school leaders, the conditions for beginning teachers to feel supported in their own professional learning and practice, student learning will benefit, as will the profession itself.

#### **4. Data Collection and Analysis**

Through the year, data was collected using a variety of methodologies. The quantitative data was gathered through attendance at the various sessions, the number of visits to the Beginning Teachers Initiative website, and retention levels through the Rocky View Schools Human Resources department. Also qualitative data was collected regularly through participants' reflections on each of the seven sessions and a final reflection for the 2012-2013 school year.

Attendance at each of the sessions was good. For each of the Community of Practice days, attendance was 100%. For those days outside the formal professional learning days, attendance was lower yet still acceptable at between 70 and 100%. This was designed as a voluntary program as there are variances in readiness levels for beginning teachers. Some of the beginning teachers stayed within their school community for their professional learning while others chose to become part of this cohort. In the 2010-2011 school year, we had four participants all in their first year of teaching. In the 2011-2012 school year, we had twelve participants, again all in their first year. By the 2012-2013 school year, we had twenty participants, some in their first year and some that continued with the program into their second year of teaching. We also provided support for pre-service teachers while they were completing their practicum within the school division.

Rocky View Schools is one of the fastest growing school divisions in the province of Alberta and as such, the growth of the number of participants in the program can be attributed to Divisional growth but also to the success and support achieved from this program. We are expecting in the 2013-2014 school year that the participant level will double again.

The [Beginning Teachers website](#) offered the participants a quick reference guide for much of the latest research and promising practices. The website was developed in 2011-2012 using as its base and with permission from Robert Marzano (2007), *The Art and Science of Teaching*. From there, the website has developed into an interactive tool where beginning teachers can connect and discuss relevant issues. It has also been the storage house for the agenda and reflections of each session. The website is maintained regularly. From the data gathered, there has been at least one visitor to the website on a daily basis, and on many days we are getting 30 to 50 “hits”.

The Human Resources department for Rocky View Schools collects data for the acquisition and retention of new and beginning teachers. In 2010-2011, all of the four participants retained their positions with the school division and continue to teach for the school division. In the 2011-2012 school year, all twelve participants also retained their teaching positions. In 2012-2013, of the twenty beginning teachers participating in the Beginning Teachers Initiative, all but one retained a teaching position. One teacher resigned her position by the middle of the year.

The qualitative data reflects the success of the program and the individual and collective learning of the group. Each session provided the participants an opportunity to reflect on their own learning and how that could be transferred into their own practice. As well, a final reflection provided data that spoke to a variety of questions. Each question reflected the desired outcomes of the program itself. It gave the beginning teachers an opportunity to reflect on their own learning and the journey through the first few years of their teaching career. Each of the questions is discussed below along with the reflections from the beginning teachers themselves.

*1. Describe one accomplishment you are proud of and why?*

Since the first few years of teaching are daunting at best, learning curriculum, program design, evaluation tools, and classroom organization and management, the initial question served as a place for these beginning teachers to reflect on what had really gone right in their first experiences as a teacher. They are insightful in their reflections and

overwhelmingly keyed in on the importance of the relationships they built with their students and their colleagues.

I am proud of the relationships that I developed with my students, and how I was able to use this to connect with them with their learning as well. I have one student in my classroom especially that was a challenge to 'get through to'. He went from not even talking to me or coming into the classroom to playing games, talking and participating in the class. (First year teacher)

I am proud of the deep relationships I have been able to build with my students. It is my hope that when students come into my class that they know that they have at least one person who cares and has their best interest in mind. I have a particular grade nine student who has a "spare" during my grade nine English class and he comes just to hang out. Although you may think he is coming simply to hang out with his friends, which he might, I know that he is having severe problems at home and if he feels comfortable and safe "hanging out" in my class, I feel like I am doing a good thing." (Second year teacher)

After my first year as a substitute participating in the Beginning Teacher Community of Practice I witnessed my peers fears and anxiety facing their first year of teaching. I sat back and nervously waited for my opportunity to have my own class, slightly apprehensive of what I was getting into and worried that my "dream job" may not be what I had expected. Now that I am a year into my own classroom and have experienced some of those same fears and anxieties, I am most proud of the positive outlook and attitude I have been able to maintain. I am still in love with my profession and am grateful for every day I am able to walk into my class of 24 willing and eager faces and explore our learning and their interests together. I think I have accomplished a great feat in the education profession of continuing to be a lifelong learner and not be discouraged by all of the responsibilities it entails." (Second year teacher)

"I am most proud of my work on using inquiry in my classes this year. I was able to participate in developing two inquiry projects through the division. I am proud of the outcome of these projects as I believe they have had, and will have, a great impact on student learning as they require many 21st century learning skills. While working through the process, I feel I have developed professionally and now use inquiry on a more daily basis with my students and not just in a project based setting. I believe I was also able to develop new and stronger working relationships with my colleagues through these projects." (First year teacher)

II. *How have you used Understanding by Design in planning and designing learning experiences for your students?*

One of our focuses for instructional design in Rockyview Schools is using the *Understanding by Design* model. (Wiggins and McTighe, 2005). As a cohort, we were able to help these beginning teachers understand this model and to help them use it in their own practice. Because our beginning teachers come to us from a variety of teacher education programs, we cannot as a school division, be assured that all have the required background and theory we wish to promote. What the Beginning Teachers' Initiative has done is created a common understanding, knowledge, and language of 21<sup>st</sup> century learning and teaching for all teachers in our school division.

I used Understanding by Design in all my planning, but especially in unit planning. It is helpful to have an idea of what you want the end outcome in knowledge or understanding for students to be. Planning the learning experiences needed to reach that point becomes much easier and really focuses what is happening in the classroom. (First year teacher)

Luckily in the first year of this CofP we had the opportunity to play with the UbD concept and collaborate and design lessons with it. I found that using the UbD concept broke down the curriculum into manageable bits and made my planning more thorough and specific. This year I used it in a couple math units (multiplication, geometry and fractions), all of my science units and a few language arts units (poetry and a novel study). An end project and goal was established and then from there I worked backwards [sic] to plan the mini lessons that would give them the skills to accomplish the end goal. Looking back those are the units my students enjoyed the most and obtained the most from. (Second year teacher)

I have used Understanding by Design to develop inquiry and project based learning activities for my students in all core curricular units. The Understanding by Design framework helps me to develop deeper essential questions that focus and guide critical thinking within my classroom. The Understanding by Design framework helps me ensure I provide multiple ways of representing, engaging, and presenting knowledge to meet the diverse learners in my class. (First year teacher)

Understanding by Design has helped me develop unique learning opportunities for my students that are centered and driven by essential questions. By ensuring

my students have opportunities to learn in flexible learning environments, with different opportunities, my students have had the ability to engage in projects that allow for student choice and a broad range of direction. (Second year teacher)

*III. How have you used Universal Learning Environments in planning and designing learning experiences for your students?*

Another area of focus for teacher development and professional learning through Rocky View Schools is the idea of Universal Learning Environments. Here all students receive the individualized and personal support from their teacher. Again, the Beginning Teachers' Initiative created a space for learning and collaboration to take place. We explored such questions such as: How do we support all learners in a classroom? How can we individualize a program for each student making sure that all learning outcomes are met? Again, the responses from the participants were insightful. Some talked about the ability of on-line technologies to assist in this differentiation and others talked about differentiation in assignments and assessments.

By having an online presence for all of my classes, my students have the flexibility to access my classroom at anytime and any where. This learning environment, which is supplemented in accordance to my daily classroom interaction, provides students with access to multiple learning avenues so that they have different options when students are acquiring information. I have also created discussion boards that allow students to make meaning of the issue questions they are examining--this is a great place for students to engage in discussion, ask questions, and have a voice. My online presence has also served as a great place for my students to showcase their learning when they are at the "transfer" stage. (Second year teacher)

I have a wide variety of students ranging in levels and abilities. I will often plan a lesson, using various methods to present the material. The students then have various methods to demonstrate their learning. If a student suggests a wild project idea, I will often say yes because I know they are enthusiastic about it and will often be more motivated in accomplishing the task. (Second year teacher)

By providing a variety of ways that they learn, practice and show their growth I have tried to provide a learning environment that meets all the students needs. Incorporating music into math, drama into LA, and providing opportunities for students to learn outside are all things I have tried to do. Presenting information

with audio, visuals, movement, music and words I try to get all the students engaged and understanding. While assessing I try to keep in mind that students need to show their learning in a form that they are comfortable with, and have the best chance of being successful in. (Second year teacher)

Universal Learning Environments are essential to student engagement of learning. Providing multiple ways for students to interact with material and have material accessible to all learners is critical. One form of this was to use a graphic novel in my grade 7 Language Arts class. The students of a variety of reading levels and abilities including ELLs [English Language Learners] were able to interact with the content. The critical challenges surrounding the content were then tailored to their individual learning needs or literacy goals. ULE's are a constant focus in my instructional design in order to target all the learners in my classroom and so that they may be successful with content, meeting learning outcomes and to have a sense of accomplishment in their experiences at school. (Second year teacher)

*IV. How have you used Balanced Assessment in planning and designing learning experiences for your students?*

Another area of focus for Rocky View Schools is the idea of balanced assessment. As a teacher, it is important to use both summative and formative assessment along with metacognition to increase student learning. Again, as a cohort, the beginning teachers clarified their understanding of balanced assessment and what that actually means in their classroom and teaching practice.

I have used formative assessments constantly to check in with students to where we were at. These exit cards, quick checks etc. informed my planning and how I delivered/changed my teaching. Constant communication with the students enabled them to know what they had to do to succeed, and their parents were there to support them in this. Summative assessments showed me how the learners understood the material after I had taught and they had practiced/interacted with it. This will help me in years to come! (First year teacher)

Through the development of daily activities and projects, one of my main focuses is to ensure that students have multiple opportunities to practice the essential skills needed in Social Studies. As one example, it is common practice for my students to engage in discussion boards where they are asked to reflect on the essential questions in class, while defending and establishing a position on a topic that has multiple perspectives associated with it. When designing projects, my

department has implemented a "chunking process" which includes student critiques and feedback (allowing for formative assessment) while integrating a skill associated with each element of the project. By looking at the "big picture" in planning it has allowed me to focus on essential questions and ensure that students are inquiring into these questions both through formative and summative assessment; at the same time they are continuously practicing the skills they need to be critical thinkers, analytical writers and 21st century learners. When it gets to the point of a summative assessment, my students have practiced in risk free environments along the way, which allows for greater student success." (Second year teacher)

Balanced Assessment has been incorporated into my planning and designing for students by multiple methods. I have utilized literacy assessments to find target areas of growth for my students. Once learning the target areas I was able to design my instruction around the needs of my learners in the lessons and activities for them. Further, ongoing assessment with one on one conferencing, small group conferencing allows for check points and check ins with students to tailor instruction based on assessing how they are managing the material and their level of engagement. From these conferences I am able to provide instruction in areas where students are missing key concepts or struggling with information or strategies through mini lessons or targeted instruction. Utilizing student self evaluations assist with my designing as well to tailor to their needs, positive experiences and areas of interest. (First year teacher)

As noted, many of their responses are quite insightful and complex. They demonstrate their understanding of some of the most complicated aspects of teaching practice. However, they not only understand but also can put these ideas into effective and strong teaching practice as evidenced by their descriptions.

*V. How have you used feedback in planning and designing learning experiences for your students?*

Another area we are trying to develop in our teachers in Rocky View Schools is the notion of feedback, particularly feedback for students both informally and formally. This question allowed the beginning teachers to reflect on their practice regarding their use of feedback in the classroom. However, most interpreted the question through the lens of increasing the effectiveness of individual lessons, assignments, or projects.

After trying a new, engaging lesson, I always ask my students for direct feedback on what went well and how they would improve upon it. The students are usually very candid and honest. I use this information to tweak my lessons going forward. (Second year teacher)

I have used Google forms as a formative self-assessment tool to measure student engagement. I have also used flex time in the classroom as an opportunity to touch base with students about general classroom feedback as well as the skill they are currently working on. (Second year teacher)

Feedback is important to assist students in guiding them to achieving the purpose of the learning goal. Feedback assists me in providing the appropriate instruction for their learning needs. (First year teacher)

I use Google Drive to provide continuous feedback to my students on the projects and assignments they are working. My students and I set goals for learning to help them improve. The feedback guides my students' goal setting and together we set a plan of how to achieve their goal. (First year teacher)

*VI. How have you used Inquiry in planning and designing learning experiences for your students?*

Last, one of the additional foci for Rocky View Schools is to build in the Inquiry model into teacher practice and instructional design. The Inquiry model, along with *Understanding by Design*, works simultaneously to create an engaging learning environment. These beginning teachers understand the power of inquiry as they plan and design their classes.

I often give students a question on the board that they must solve by planning and carrying out their own experiment. ie. In Chemistry 20 - How much Co<sub>2</sub> is in a package of poprocks? (Third year teacher)

I have involved inquiry to try and engage the students, get them asking questions and thinking critically, and create a project that not only carries into other subjects but into their real lives. Through this process students have been able to create projects/plays/songs/displays that they connect with and show their learning in a meaningful way. (First year teacher)

Inquiry planning in all of my social studies classes is centered around essential questions. These questions are posted clearly in my classroom and clearly incorporated into daily lessons as well as project design. (First year teacher)

Inquiry is an area that is ongoing for myself in terms of how to support students with being successful. I have attempted very broad open inquiry projects learning quickly the scaffolding and supports that are needed to assist students in their strategies for working towards the goals and essential questions. Inquiry is an area that I provide opportunities within projects or material allowing for guided inquiry to be a foundation for my instructional practice. For example, some of my grade 7 students have created murals to represent Confederation in Canada. A student was able to take it from the perspective of Indigenous people and create a mural based on that lens. Allowing for students to have a voice in their learning is essential to their engagement and success. (First year teacher)

*VII. Were the speakers helpful in providing timely information and suggestions for your practice?*

The next few questions asked offered insight into the Beginning Teachers' Initiative. Tapping into the resources both human and knowledge that work for Rocky View Schools added an additional element to the professional learning of the beginning teachers. The speakers were experts in their own fields and provided the beginning teachers with support and advice. They came to understand that they were supported by a much larger network than just their colleagues and administrators in their respective schools but also by experts in a wider divisional setting.

The speakers provided information that was relevant and practical to my instruction and pedagogy. Guest Speakers focused on topics such as Diversity, Emotional Intelligence and Inquiry to name a few. These speakers expertise in their field was exceptional to have shared with us. To have access to so many experts within a small span of time facilitated excellent opportunities for trying new things and to reflect on pedagogical practices. (First year teacher)

I enjoyed every speaker that came in to speak and found them all to be relevant and applicable to my work. I do feel that the inquiry speakers could have occurred earlier on so as to inspire work in the early stages of development. I enjoyed having multiple points of view displayed and provided an avenue for professional development that otherwise would have been hard to find in the first couple of years of teaching. (Second year teacher)

I found the speakers helpful in providing information and suggestions for my practice, sometimes answering question I didn't even know I had! (First year teacher)

Definitely! I felt it was very valuable to get this information from professionals at Rocky View who are experts, was very helpful in learning about the direction of RVS and what I should be striving for. (First year teacher)

*VIII. What were two or three valuable experiences this year regarding your own professional learning?*

Professional learning takes many forms. Sometimes it is a conversation with colleagues, sometimes through a cohort model and sometimes through collaborative settings designed specifically to maximize professional learning. Building professional networks like the beginning teachers provides career-long support. Sometimes though, particularly beginning teachers have either so many questions or simply do not even know what questions to start asking. The beginning teachers' own professional learning journey should be designed individually, by them and for them.

Having a mentor to come in and observe/teach/provide support was invaluable for me [or] the time we were provided with to brainstorm and find connections with other curriculums helped generate ideas. (First year teacher)

To have access to the experts led to essential questions of my own growth and practice. Reflecting on action research and balanced assessment I utilized specialists at my school board to work with me in the classroom and with my instructional design. Collaborating with colleagues in my C of P provided me the courage and inspiration to collaborate with others in my school, and school board. These opportunities to share knowledge and practice strengthened my confidence in the classroom as a new teacher and allowed me to take risks such as the Daily 5 in a middle school classroom. (First year teacher)

I found the time to plan collaboratively with the support of the learning coaches during our discussion of UbD to be very helpful. It was nice to work through the process with other teachers and have your questions answered right away if needed. I also enjoyed the discussion of Emotional Intelligence, as I have never heard about student differences presented in that way. It was wonderful to go back to my class the next day and have somewhat of a greater understanding of how I could support those students. (First year teacher)

*IX. Was the access to direct coaching/mentoring helpful to you? If so, how? If not, why not?*

As the Beginning Teachers' Initiative evolved, Rocky View Schools provided direct coaching to the beginning teachers. These two coaches along with the facilitator, all experienced educators, offered direct support. The learning coaches would travel to the various schools to observe, discuss, plan and support the beginning teachers. They would help the beginning teachers make sense of what was going on in their classrooms. This formal support was in addition to the support available at each respective school through grade level or department teams and administration.

Yes, it was great to have experienced teachers on hand to help with my Action Research project, making UBD unit plans, and thinking about inquiry projects. (First year teacher)

Yes. It was nice to know I had a place and person to ask questions to, and that I would get help relevant to RVS and my grade level. (First year teacher)

I did utilize the coaching through email. They provided timely and relevant advice and resources. (First year teacher)

I thoroughly enjoyed the access to a coach this year. I was given resources, guidance and most importantly time from someone who I didn't feel guilty taking it from! Teachers within the school are realistically too busy to mentor beginning teachers so to have someone with ample experience at many levels who are transitioning from the teaching profession was extremely valuable. (Second year teacher)

The important piece to take out of this is that the beginning teachers' chose who to access and what level of support they wanted. Their professional learning became their own, making connections and judgments as they saw fit. This gave them the autonomy they needed and the safety net to explore.

X. *In your opinion, what was the most valuable part of the Beginning Teachers' Community of Practice?*

As an over-arching question, the value of the Beginning Teachers' Initiative in the beginning teachers' practice resulted in enthusiastic support for the program. They commented on the professional and social network created and the relationships they forged with not only each other but with their coaches and facilitators as well. They commented that their feelings of isolation were diminished and that they knew they had support if they needed it.

Meeting new teachers across the board and learning about things they do in their classrooms, regardless of the age group they teach. (Third year teacher)

Getting connected with my mentor/coach and being able to connect and share with other first year teachers who were going through the same things as I was! (First year teacher)

The most valuable part of the Community of Practice was having a support system comprised not only of the veteran teachers running the CofP but more importantly my peers; teachers just like me. It was great to have people to talk to, to vent to, and to share experiences with. It was great to realize I am not alone, and that the experiences I am having are happening to others as well. (Second year teacher)

Creating relationships with colleagues around the division and also having a time and place to discuss some of the experiences we were all having. Knowing there is a support system out there helps because when you are in a workplace surrounded by teachers who have been in the career a few more years than you, it definitely makes for different experiences. Having a place where we were all just "starting out" provides an alternative perspective. (Second year teacher)

XI. *Would you be willing to participate in the Beginning Teachers' CofP next year?  
Would you recommend that Beginning Teachers participate in the future?*

Overwhelmingly, the support for this Beginning Teachers' Initiative by the participants is strong. It was designed as a two year process so as teachers move into their third year of teaching, they can expand their own professional learning networks and move on to learning about their own passions in teaching and learning. Having the

program consist of first and second year teachers adds a dimension of experience to the conversations. Including pre-service teachers also allows for additional depth to the professional learning. Those in their first and second years offer insight into their experiences for those coming up the ranks. The support is reciprocal and generative.

Absolutely I would be willing to participate in the C of P next year. I would absolutely recommend the C of P to new teachers in the future. This experience has given me knowledge of my school board and the specialists that exist. As a new teacher to the province and a beginning teacher the C of P gave me the bridge between University and beginning my profession. Further, it provided me a great structure to continue my continued life long learning. The C of P was facilitated in a way that gave a model for how a C of P should be experienced and organized for when I am able to lead my own. (First year teacher)

I am greatly appreciative of the experience I had with the Community of Practice. While I feel that I am ready to explore other community of practice opportunities I would love to continue with coaching for one more year as a sort of transition piece to the program. I think it could look at expanding my professional portfolio and be exposed to a greater network of opportunities that would be available as I move from being a 'beginning teacher' to a 'developing professional'. I would HIGHLY recommend every beginning teacher be a part of this community. You could not ask for more willing leaders to guide you through the beginning stages of your career and an avenue such as this to break down the process and keep you grounded. It is with a heavy heart that I move on from this C of P but I firmly believe it has strengthened my foundation in this wonderful yet complex profession. (Second year teacher)

This was a great experience! I was pleasantly surprised with the amount of support I received in my first year of teaching - and it was influenced much by this C of P! (First year teacher)

I just want to thank Rocky View for this opportunity as well as Dr. Fansher. I moved here from another province and speaking to my colleagues back home, they see the value of this community of practice. The opportunity and support this has provided me in my first two years of teaching has allowed me to transition into my teaching career with the mentorship I needed. As well, the coaches offered some insight into the program as did school and district administrators. This data was collected in verbal conversations but each person was enthusiastic about the success of the program and the level of support each new teacher received. The success of the program rests on the success of the beginning teachers and the students in their classrooms. (Second year teacher)

Thank you! Thank you for the inspiration, engagement, time and encouragement that you have all given us. Thank you! (First year teacher)

## **5. Recommendations for Further Action**

As we move into the next phase of the Beginning Teachers' Initiative, changes will occur to strengthen and broaden the scope of the program. We asked the beginning teachers a question in their final reflection giving us some direction in the path to follow. Their comments suggest a greater awareness of this opportunity must be presented to all beginning teachers in Rocky View Schools. Hence, what we must do is advertise with not only the beginning teachers but also to schools' administration to promote the program. Also, we should consider having a dedicated mentor in each school, specifically not in an administrative role where these teachers could ask the seemingly innocuous questions.

*What could we do to ensure that Beginning Teachers in Rocky View receive the support they need?*

Make it known to all the beginning teachers that the coaching/mentoring and C of P is available. If I would not have been involved with the school I was at I don't think I would have been able to benefit from this amazing opportunity Rocky View provides. An email from the mentor, or a quick visit even would be beneficial in my opinion.

I think there should be someone on staff at every school that is responsible for "orienting" new teachers. Although I naturally made connections with teachers, there were still questions that I had that I was slightly anxious asking. Just having a "go-to" person would be nice.

Continue to ask what teachers need and allow them to have a voice. Provide opportunities for collaboration and time to do so.

It would be great to have new teachers paired up with a mentor. The mentor wouldn't need to be at the same school but within the board. A person that new teacher could ask those silly questions to but also to provide guidance. As new teachers are adjusting to new schools and have not developed professional relationships yet the beginning part of transition to the school is the most crucial. Further to ensure that the C of P for new teachers is provided and upon hiring it is

advised/recommended to join this C of P. Administration should also provide access to the information that the C of P exists.

I highly recommend continuing to have the coaching element. My first year with the C of P largely focused on theory, understanding and application. As I moved into my second year with the C of P I feel that the coaching provided another viewpoint and a refreshing approach to the C of P. This is an aspect that should not be lost and continue to be offered to teachers in this C of P as they transition from being a beginning teacher.

I think just providing information to first year teachers about the resources available through the division for support, including the learning specialists, would be a huge help. Perhaps holding an information session for those that are not part of the C of P would be helpful.

Make sure new teachers are aware of all the resources that are available. There is a lot of technology use in the class, but sometimes it is hard to know what we have at our disposal at RVS.

The Initiative has grown in numbers and as such, the Beginning Teachers' Initiative has split into two distinct parts for the coming 2013-2014 school year. The four Community of Practice days, lead by two veteran teachers and administrators, will continue focusing on the goals of bridging the beginning teachers experience from university to daily practice. The second part, *Vistas*, will offer the beginning teachers mentoring and coaching from a divisional level through the Organizational Learning department, along with introducing them to the resources available. In this way, we hope to continue the success of previous years, yet offer even greater support to our growing cohort of beginning teachers.

Where this will evolve, no one can know for sure. Beyond continuing the practice that has already been established, there are still groups of teachers who would benefit from this type of wrap-around service. Potentially, experienced teachers within Rocky View Schools may find this program beneficial to their teaching practice. Administrators may want to recommend this program to some who are struggling. Also, those experienced teachers who are new to Rocky View Schools may be included in this program. It lays the foundation for what is important in the school division and creates a culture of what it means to teach within Rocky View Schools. Additionally, one group we need to be aware of is the pre-service teachers. Each year, teachers invite pre-service

teachers in to their classrooms to do their practice teaching. These pre-service teachers could potentially be the new employees for the school division and would therefore already be aware of the culture and expectations of Rocky View Schools.

Building the bridge between theory and practice is important as we support and encourage new and beginning teachers. Making sense of what is going on in their own classrooms and working collaboratively only strengthens a new teacher's practice. If we can ensure that their foundation is strong, we can strengthen the profession, the division and most importantly, student learning.

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## **Using the Flipped Classroom to Teach Flower/Foliage Production, Plant Growth/Development, and Crop Modeling Courses**

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### **Abstract**

In a typical classroom setting, the instructor lectures, and students do homework activities outside of class. The flipped classroom technique was used in several horticulture courses in which lecture material was assigned for homework, and students did active learning activities in the classroom. The objective of this paper is to discuss how the flipped classroom approach was used in Tropical Plant & Soil Sciences (TPSS) courses—TPSS 402 Flower and Foliage Production, TPSS 601 Crop Modeling, and TPSS 674 Plant Growth and Development.

TPSS 402 is an upper level undergraduate level course offered every other fall term. Lecture topics focused on factors affecting plant growth, namely, light, temperature, plant nutrition, plant growth regulation, pest and disease control, and postharvest handling. Later in the semester, production requirements of commercially important flower and foliage crops grown in Hawaii were discussed. Online information sources such as YouTube videos, e-Gro University modules, and online articles in Greenhouse Grower and Greenhouse Product News, were provided as assigned readings to students. Virtual field tours of production sites were experienced on UBloom.com.

In TPSS 601 and 674, various lectures were replaced by YouTube videos, websites, and HortTalks presentations which students viewed outside of class. They reviewed the Virtual Plants online crop simulation, Flower Power wheat flowering model, Prune Chilling Prediction Model, chilling accumulation models, and a growing degree-days phenology model. Students were encouraged to bring their laptops, tablets, and smartphones to class to do Internet searches for relevant information for class discussions, small group discussions, and hands-on activities. In class, students ran online computer simulations. For homework, students searched for online crop models and brought their URLs to class to share with other students. Using the flipped classroom approach helped reduce lecture preparation time and create an active learning environment in the classroom.

## **Introduction**

The typical university classroom setting has students in class to hear a lecture from the instructor, take notes, and then work on homework, projects, and other activities outside of class (Talbert, 2012). However, the lecture format may not always be the best practice for student learning. The flipped classroom approach replaces the lecture format with the in-class exploring of concepts and discussion of materials from outside of class. Students learn and review information outside of class and come to class prepared to discuss concepts and participate in active learning activities (Kharbach, M. 2012; Young, 2011). Studies have shown that the flipped classroom approach can improve student learning, for example, improving exam scores in introductory biology classes (Moravac et al., 2010). The objective of this paper is to discuss how the flipped classroom approach was used in Tropical Plant & Soil Sciences (TPSS) courses—TPSS 402 Flower and Foliage Production, TPSS 674 Plant Growth and Development, and TPSS 601 Crop Modeling.

## **TPSS 402 Flower/Foliage Production**

Teresita Amore

TPSS 402 is an upper level undergraduate course offered every other fall term. The course covers the biology and production of cut flowers, flowering potted plants, foliage plants under field and protected cultivation in Hawai'i and globally (<http://www.catalog.hawaii.edu/courses/departments/tpss.htm>). Learning modules focused on factors influencing plant growth such as light, temperature, plant nutrition, plant growth regulation, pest and disease control, and postharvest handling, to provide the scientific basis of plant production.

In addition to the required textbook, online information sources such as e-GRO University modules, YouTube videos, FloriCAST videos and online articles in Greenhouse Grower and Greenhouse Product News, were assigned to students to supplement the lectures. The website e-gro.org (<http://e-gro.org/>) is home to Electronic Grower Resource Online (e-GRO) and provides a comprehensive, up-to-date online floriculture reference. e-GRO provides a link to e-GRO University, a free online introductory greenhouse production course, produced by six university faculty across the United States, and covers a diverse set of topics on the greenhouse management, plant growth management, nutrient management and pest and disease management. FloriCAST is a series of podcasts/educational videos hosted by Greenhouse Grower (<http://www.greenhousegrower.com/video/>) in conjunction with Cornell University, North Carolina State University, Kansas State University and the University of New Hampshire. The videos ranging from 5-10 minutes provide basic and in-depth information on general production, disease control, insect control, nutrition, and plant growth regulators.

Utilizing e-Gro University or FloriCast is akin to inviting guest lecturers to share their expertise in specific topics or modules, or having the students go on a study abroad or

exchange program. The presenters are faculty members in other universities, and are familiar names in trade publications. A disadvantage is the lack of interpersonal exchange wherein students can ask questions of the guest lecturers.

To illustrate the application of the flipped classroom in TPSS 402, an instructional module on light and temperature as factors affecting plant growth was developed with a lecture and laboratory exercise. The lecture was presented by a faculty member with considerable background in utilizing different instruments to monitor light and temperature in the growing environment. To prepare for the lecture, a list of readings from the e-Gro University topics was provided by the guest lecturer (Figure 1), and emailed to the students prior to lecture. During the lecture, the importance of timing of crops to meet specific market needs, identification of environmental factors influencing the timing of crop, and the need to measure the environmental factors using simple to operate and portable instruments, were stressed to the students by the guest lecturer. Students then used different instruments to measure light intensity and temperature in the greenhouse in the laboratory period following the lecture. Students then collate their information and prepare laboratory reports which include data on shade levels in the greenhouse, air, leaf and potting medium temperatures under different shade levels, and differences in air, leaf and medium temperatures after overhead irrigation.

e-GRO University  
[http://www.e-gro.org/egrouni\\_full.php](http://www.e-gro.org/egrouni_full.php)

LIGHT

Effects of Increasing Light Quantity on Greenhouse Crops. Vol. 2.03.

Effects of Light Quality and Duration on Green Crops. Vol. 2.04.

Measuring and Monitoring Photosynthetic Light in a Greenhouse. Vol. 2.02.

TEMPERATURE

Effects of Temperature on Greenhouse Crops. Vol. 2.06.

Measuring Temperature in a Greenhouse. Vol. 2.07.

**Figure 1.** Example of online resources sent to students prior to the lecture.

Production requirements of commercially important flower and foliage crops grown in Hawaii and elsewhere are discussed in the latter part of the semester. Where production sites are within driving distance from the university campus, field trips are scheduled to observe nursery production practices. However, some of the important floriculture or foliage crops are produced on a neighboring island, or out-of state. Virtual tours via YouTube videos or California Grown Experience on UBloom videos are assigned to expose students to production practices in a real world setting, as opposed to reading or seeing pictures in a textbook or publication. For instance, students can visit flower

production facilities in California such as the Ocean Breeze International cut chrysanthemum farm (Figure 2), Westerlay Orchids (Figure 3), or the Resendiz Brothers protea production farm (Figure 4).



[Tweet](#) [Like](#) [0](#)

**The CA Grown Experience on uBloom visits Ocean Breeze International**



**Figure 2.** Cut chrysanthemum production: <http://ubloom.com/blog/2010/11/01/the-ca-grown-experience-on-ubloom-visits-ocean-breeze-international/>



**Figure 3.** Phalaenopsis orchid production in Westerlay Orchids, Carpenteria, California. <http://ubloom.com/blog/2011/08/22/the-ca-grown-experience-on-ubloom-visits-westerlay-orchids/>



**Figure 4.** Protea production in the Resendiz Brothers farm in Fallbrook, California. <http://ubloom.com/blog/2011/06/06/the-ca-grown-experience-on-ubloom-visits-resendiz-brothers-spring-flower-fields/>

The advantages of online videos are 1) no cost compared to instructional DVDs; 2) students can go on virtual tours of production areas, that would have been otherwise costlier to visit; 3) students are able to view videos online on their own without signing out for single copy DVDs. A disadvantage of virtual tours is the absence of person-to-person interaction. Students are unable to ask questions of the owner of the facility.

The flipped approach for TPSS 402 enriches the traditional approach of lecture/laboratory teaching method. Online resources broaden the students' learning by listening to guest lecturers and virtually visiting production areas.

### **TPSS 674 Plant Growth and Development and TPSS 601 Crop Modeling** Kent Kobayashi

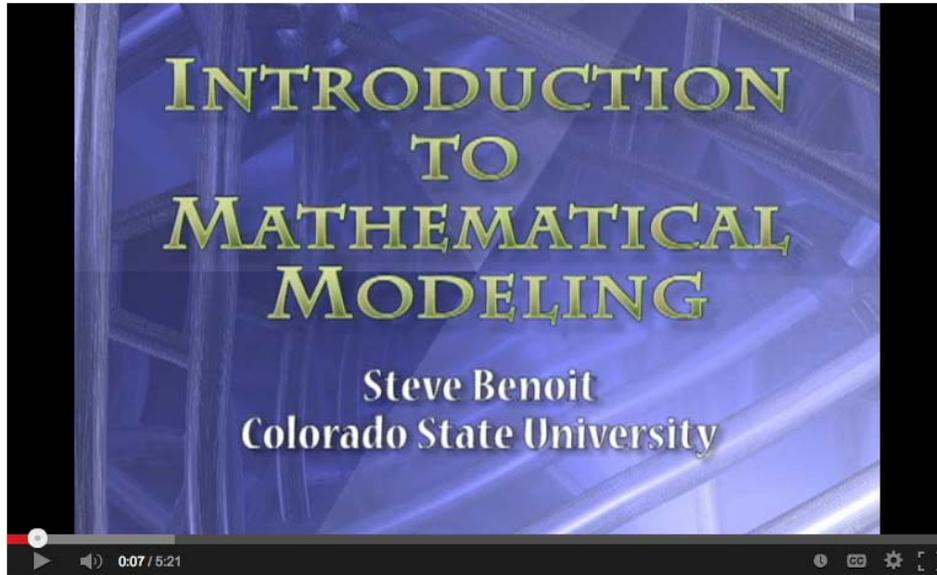
*Philosophy.* I have used the lecture format in my courses, but prefer not to use this technique extensively. When I was a new faculty in 1982-83, I used the lecture format almost exclusive to teach TPSS 601 ( <http://manoa.hawaii.edu/ctahr/tpss/current-students/course?id=601> ). Over the years, I have learned other teaching techniques and have reduced the amount of lecturing that I do in my courses. I now use the flipped classroom approach to help make my courses more interactive and hands-on.

Another reason for using the flipped classroom approach is to reduce my teaching preparation time. When I was hired, I was responsible for developing and teaching only

one course, TPSS 601. Now, I teach three courses a year—TPSS 601 or TPSS 674 Plant Growth and Development (team taught, <http://manoa.hawaii.edu/ctahr/tpss/current-students/course?id=674>) on an alternate year basis, TPSS 654 Communications in the Sciences (<http://manoa.hawaii.edu/ctahr/tpss/current-students/course?id=654>), and TPSS 300 Tropical Production Systems (<http://manoa.hawaii.edu/ctahr/tpss/current-students/course?id=300>). This may not seem like a lot of teaching, but I am a Researcher (> 0.5 FTE) with some Extension FTE and Teaching FTE also. I am evaluated primarily on my research and thus would like to reduce the amount of time used to prepare lectures. The flipped classroom approach has helped me do this.

*Approach.* I first heard and learned about the flipped classroom approach in a workshop by the University of Hawaii at Manoa Center for Teaching Excellence (<http://www.cte.hawaii.edu>). Subsequently, my goal has been to continue to learn about and incorporate some of the aspects of the flipped classroom approach into my courses.

*Procedure.* In TPSS 601 and 674, various lectures were replaced by YouTube videos (Figure 5), websites, and HortTalks presentations ([http://ashs.org/index.php?option=com\\_content&view=category&id=44&Itemid=146](http://ashs.org/index.php?option=com_content&view=category&id=44&Itemid=146)) which students viewed outside of class. HortTalks are conference presentations from American Society for Horticultural Science conferences, which include oral sessions, workshops, colloquia, and symposia talks. The students read about and ran the Virtual Plants online crop simulation (Figure 6), Flower Power wheat flowering model (Figure 7), Prune Chilling Prediction Model (Figure 8), chilling accumulation models, and a growing degree-days phenology model (Figure 9).



### Introduction to Modeling Lesson

**Figure 5.** YouTube video "Introduction to Mathematical Modeling" by Steve Benoit, Colorado State University. The topics covered include mathematics and the scientific method, statistical models, modeling and prediction, computers and mathematical modeling, and mathematical modeling activity. < <http://www.youtube.com/watch?v=GnlGmLNn5o> >.

## Virtual Cotton Comparison

Previous

Index

Next



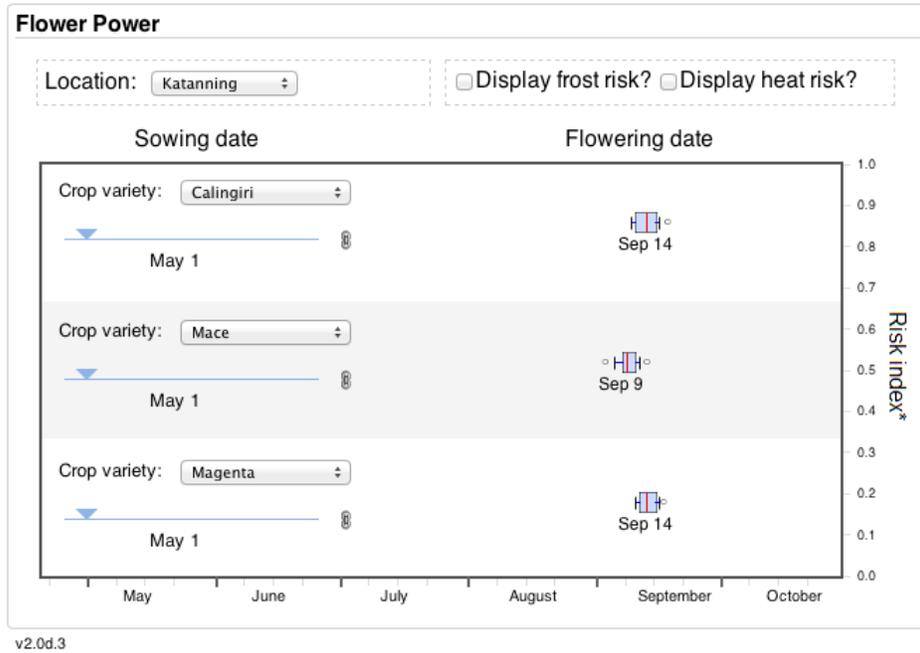
Comparison of development by 'normal' and 'okra leaf' varieties. As well as having much more finely dissected leaves, okra leaf cotton has slightly longer internodes than the normal leaf variety which results in a taller and thinner plant. This simulation is based on several simplifying assumptions, such as uniform soil.

**Figure 6.** The Virtual Plants website provides hands-on computer simulations of plant growth and development in 3-D. Outputs are realistic or schematic images or animations. The 3-D images or animations represent the physiology processes that are occurring in the plants. < <http://www.biologie.uni-hamburg.de/b-online/virtualplants/ipivp.html> >.

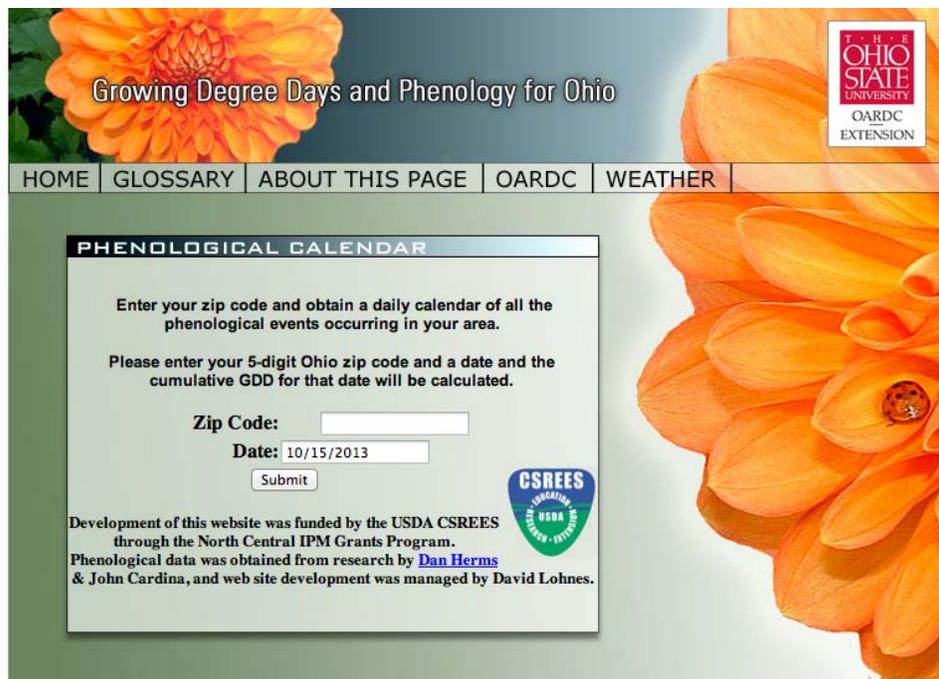
## FLOWER POWER

An online tool to predict when wheat varieties flower in Western Australia and display frost and heat risk.

Understanding flowering times of different varieties and the risk of frost or heat stress in your location can be used to sowing date.



**Figure 7.** Flower Power is an online tool to predict when wheat varieties will flower in Western Australia and displays frost and heat risks. Such predictions help in variety selection, appropriate sowing dates, and appropriate frost and heat protection measures. < <http://grains.agric.wa.gov.au/flower-power> >.



**Figure 8.** Growing Degree Days and Phenology for Ohio is an interactive website that assists growers in Ohio in deciding whether and when to spray pesticides for insects and pests. < <http://www.oardc.ohio-state.edu/gdd/> >.



## Chilling Predictor

Select Station and enter Target Chill Portions

<b>CIMIS Station</b>	Select a Station ▾
<b>Target Chill Portions</b>	40
Get Estimated Spray Date	
Comments / Complaints	

---

- [Cumulative Chilling Hours](#)  
Hours below 45°F  
Hours between 32°F and 45°F  
November 1 thru February 28/29
- [Cumulative Chilling Portions](#)  
Portions (Dynamic Model)  
September 1 through August 31
- [Cumulative Chilling - Research](#)  
Hours below 45°F  
Hours between 32°F and 45°F  
Units (Utah Model)  
September 1 through August 31
- [Harvest Prediction Module](#)  
for Peaches, Plums, and Nectarines  
February 1 through May 31
- [Fruit & Nut Research and Information Center](#)
- [Weather-Related Models](#)
- [Harvest Prediction: About Growing Degree Hours](#)

**Figure 9.** Prune Chilling Predictor Model was developed by University of California Davis. By predicting the number of days until dormancy, the model helps in determining when to spray chemicals to end dormancy earlier and promote earlier flowering. < <http://ucce.ucdavis.edu/rics/fnric2/chillcalc/prunecalc.cfm> >.

More class time in my courses was spent on interactive, collaborative learning activities including small group discussions (Hughes, 2012), class discussions, in-class activities, and oral presentations (Pappas, 2013). Students were encouraged to bring their laptops, tablets, and smartphones to class to do Internet searches for relevant information for class discussions, small group discussions, and hands-on activities. In class, students ran online computer simulations, showed them to other students, and discussed them. For homework, students searched for online crop models and brought their URLs to class to share with other students.

*Discussion.* The use of YouTube videos, websites, and online computer models and simulations helped reduce the time I spent developing lectures on some specific topics (Kordyban and Kinash, 2013). I did notice that it required more commitment and work up front to search and evaluate videos and websites to be sure they were appropriate for the students and provided information that would have been covered by my lectures (Houston & Lin, 2012). Videos needed to be brief, 3 to 5 minutes long, to maintain

student interest (Pappas, 2013). Thus, I did not select 30-minute or hour-long videos. Ten to 15 minutes was the upper limit.

I needed to be careful to not depend on the flipped classroom approach so much as to forget about the important of lecturing. Some topics just lend themselves to lectures and explanations by the instructor. I also had to be aware of not using the same flipped classroom techniques over and over to avoid students getting tired of it. I still continued to use in-class assignments, small group activities, and class discussions that were not always related to the materials that the students had read or viewed outside of class. The students were also given homework assignments to do outside of class.

Students were not assessed to the effectiveness of the flipped classroom approach, for example, using a pre-test and post-test or using the flipped classroom approach one semester and not using it in another semester for comparison. I did have a means of providing accountability of students to view lecture materials outside of class and then come prepared to discuss the course materials in class. I did not consider the idea that video and multimedia materials may not be accessible by students who did not have access to computers or mobile devices or students with disabilities (Young 2011).

I agree with Young (2011) that flipped classroom changes do not have to be huge to yield significant results. Using the flipped classroom approach helped reduce lecture preparation time and create an active learning environment in the classroom. The modifications to these courses helped the students with critical thinking, teamwork, and recognition of the potential significance of the flipped classroom approach.

## **Conclusions**

The flipped approach for TPSS 402 enriches the traditional approach of lecture/laboratory teaching method. Online resources broaden the students' learning by listening to guest lecturers and virtually visiting production areas. Using the flipped classroom approach helped reduce lecture preparation time and create an active learning environment in the classroom. The modifications to these courses helped the students with critical thinking, teamwork, and recognition of the potential significance of the flipped classroom approach.

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## 2014 Hawaii International Conference on Education

### Presentation Proposal

1. TITLE: Improving Mathematics Teachers' Technology, Mathematics Knowledge, and Pedagogical Content Knowledge for Practical Teaching
2. TOPIC AREA: Mathematics teacher education
3. PRESENTATION FORMAT: paper session
4. AUTHORS:

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# **Improving Mathematics Teachers' Technology, Mathematics Knowledge, and Pedagogical Content Knowledge for Practical Teaching**

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## **Abstract**

*This study examines the changes in teachers' technological pedagogical content knowledge (TPACK) and attitudes toward mathematics teaching of grade eighth teachers after completing a one-year collaborative inquiry program. Theoretical frames, strategies and training content of the project are described. The results indicate that the integration of technology such as geometric software and grade eight mathematics online resources, mathematics content and pedagogical strategies is an effective way to help teachers' professional development. Wikis are good tools to help teachers' learning and share resources, but teachers need more training to use two-way interaction websites. Collaboration between peer teachers, schools and education institutes, researchers and practical teachers can improve teachers' professional knowledge.*

**Keywords:** teachers' professional development, collaboration, use of technology

## **Introduction**

Highly qualified teachers enhance student achievement in mathematics. Subject teachers require not only a deep understanding of subject matter but also the methods to deliver subject matter knowledge to students. With the research in the recent decades, mathematics educational scholars have found weaknesses in mathematics teachers in North America (Ma, 1999). International studies such as TIMSS also showed that Canadian students did not performed well enough comparing to their counterparts of East Asia (Millis, et al., 2012). The results reflected the deficiencies of mathematics teachers' knowledge in mathematics and pedagogical content knowledge. As a result, mathematics teachers need to upgrade their subject matter knowledge and pedagogy. Moreover, with the development new technology such as geometric and algebraic

software and two ways websites that allow interaction between web users, teachers' pedagogical methods should be upgraded to help them represent content knowledge. They also need to know the methods for their communication so that they can learn from others and communicate with students, parents and colleagues.

How to help mathematics teachers to increase their knowledge about mathematics content and pedagogical skills is an important issue in teachers' professional development. The collaborative teacher inquiry project described in this paper develops a new model to integrate technology, mathematics content, and pedagogical knowledge to enhance and encourage professional development with teachers. This study examines the effectiveness of how grade eight teachers improve their professional knowledge.

### **Theoretical Framework**

When mathematics researchers have found elementary mathematics teachers' deficiencies in mathematics knowledge and pedagogical content knowledge (Ball, 1990; Ma, 1999), educational institutions have been worked on upgrading teachers' knowledge for teaching. Many states in US adopted standards for inservice teachers' professional development in order to help students increase their achievement in mathematics (Wei, et. al., 2009). Some researchers pointed out that preservice mathematics teachers are mis-educated in teacher preparation programs (Wu, 2011) and preservice teachers' training is insufficient (Shuman, 1999). The knowledge provided to preservice teachers is not matched with the need of practical classroom teaching (Wu, 2011).

In recent decades, educational researchers tried to find effective ways to improve teachers' professional knowledge (Desimone, 2009). Educational "field has acknowledged a need for more empirically valid methods of studying professional development" (p. 181). Scholars did emphasize job-embedded and collaborative professional learning (Wei, et al. 2009). Hence, creating a professional learning community is important to help teachers' formal and informal professional development. Here, the formal refers to learning opportunities by educational institutions, workshops and conferences while informal refers to learning from non-organized activities such as sharing ideas with colleagues (Wei, et al. 2009).

In addition, with the development of technology, mathematics computer software and Internet websites which include mathematics teaching resources, and as tools of communication and collaboration have appeared for years, mathematics teachers need to master these technologies to facilitate their teaching and professional development. Many governments or educational organizations such as Singapore (Hew, 2006) and the NCTM (NCTM Position Statement, 2011) encourage teachers integrating technology into classroom teaching. Hence, the

development of computer information communication technology (ICT) provides a chance to improve teachers' professional knowledge. It provides an informal and integral tool for teaching and learning (Solomon & Schrum, 2007). Technology should be integrated into the work of teachers through:

the incorporation of *technology resources* and *technology-based practices* into the daily routines, work, and management of schools. *Technology resources* are computers and specialized software, network-based communication systems, and other equipment and infrastructure. *Practices* include collaborative work and communication, Internet-based research, remote access to instrumentation, network-based transmission and retrieval of data, and other methods. (Technology in Schools Taskforce, 2002, p. 75)

Collective collaboration is effective way to improve teachers' professional knowledge (Geret, et. al, 2001; Wei, et al, 2009). In the collaboration, each participant should take some responsibility of collective cognition. The participants bring some contribution for group success (Scardamalia, 2002). Teachers will bring their expertise in mathematics teaching and learning, so that they can share their ideas by assembling in an educational institute or virtual websites. Situated approach to teachers' creating learning environment and learning is a new way of teaching (Putnam & Borko, 2000).

Teachers' programs in various subjects should focus on "a core set of features of effective professional development and a core conceptual framework" (Desimone, 2009, p. 181). Research has been showed that teachers' professional development focuses on specific mathematics content on teaching and learning is much better than general training (Cohen & Hill, 1998; Kennedy, 1998).

Mathematics teachers' core features and conceptual framework in grade 8 mathematics should concentrate on practical teaching and learning. McDougall (2004) designed ten dimensions to develop teachers' professional knowledge and to develop an understanding of what might be improved in their teaching practice. The ten dimensions can be further illustrated through a 20-item survey on teachers' attitude and beliefs on teaching practice (McDougall, 2004). The ten dimensions are: (1) program scope and planning, (2) meeting individual needs, (3) learning environment, (4) student tasks, (5) constructing knowledge, (6) communicating with parents, (7) manipulatives and technology, (8) students' mathematical communication, (9) assessment, and (10) teacher's attitude towards and comfort with mathematics. This teachers' inquiry project set this ten dimensions as a guide to carry on the training, investigation, interview and surveys. Some focuses dimensions selected by schools will be relied on their needs.

### **Design of the project**

This one-year involved grade eight mathematics teachers from an urban school district in Ontario. Because Ontario elementary school teachers work all day in classrooms and they teach multi-courses in one semester, the program combined face to face workshops with on-line sources, teaching materials and forums. Part of content of the workshops encouraged participants to engage in formal and informal professional learning.

The workshops were conducted four times over a seven-month period. Before each workshop, the project designers and researchers investigated what teachers needed for their work, and then the workshop addressed these issues. The Ten Dimensions of Mathematics Education conceptual framework (McDougall, 2004) was used for the identification of areas of improvement. Principals and teachers participating in the project determined their goals at the beginning the project. According to the school's and teachers' situation, they selected a couple of dimensions (out of Ten Dimensions) for development in the first year program. The schools identified five dimensions amongst them: student tasks, constructing knowledge, manipulative and technology, assessment, and teacher comfort and attitude towards mathematics.

We provided many resources for teachers about practical teaching, technology-supported-pedagogical skills, and assessment skills. We also provided an environment for teachers to work collaboratively, and encouraged teachers to be collectively responsible for their own professional development. The teachers used a wiki (<http://grade8project.wikispaces.com/>), managed by the project team, to provide a platform for researchers and participants to share ideas and resources.

## **Method**

Quantitative and qualitative data were collected to examine the effects of the project. The research questions are: how teachers' improve their pedagogical knowledge?, what they view of use of technology?, and what we should provide in future programs?. The participants were 31 eighth grade mathematics teachers and 8 principals from eight different schools in a large urban school district in Ontario.

Data collection was by interviews and a 20-item Likert scale instrument (Appendix A). The surveys were administered at the beginning and the end the project. 29 and 24 teachers answered 20-item surveys at the beginning and the end respectively, while 18 teachers completed both surveys. The interviews gathered information related to professional development, teacher's background, teaching resource requirements, teaching supports, their attitudes and goals, their understanding of the curriculum, and their pedagogical content knowledge. At end of the project, researchers conducted a survey that collected participants' view and comments about the project, and suggestions for their professional development.

The mixed quantitative and qualitative research methods are employed to analyze the data. Paired T-test is used to compare the mean differences and changes of teachers' attitudes and pedagogical knowledge. Qualitative analysis will confirm these changes by analyzing interview data and the final survey. Advanced Excel, SPSS and Nvivo 10 were used to data coding and analysis.

## **Results**

The quantitative and qualitative results are described below. The quantitative results focus on comparison means and focus on the effect of teachers' professional development in mathematics attitudes and teaching strategies, use of technology in computer geometric software and wikis.

### **Quantitative:**

Quantitative results showed that teachers' attitudes and their mathematics teaching methods changed over the one year project. The paired T-test results indicate those teachers' attitudes and mathematics teaching methods of items 8, 9 and 16 were significantly changed in 95 percent confidence interval, and items 2, 10 and 12 are significantly changed in 90 percent confidence interval (Appendix B). Due to the intervention workshops, interactive website and school visits, teachers used more real life problems that are of interest to them (item 2). They integrated a variety of assessment strategies into most math activities and tasks (item 8). They communicated more with parents about students' achievement and about the mathematics program (item 9), they encouraged students to use manipulative to communicate their mathematics ideas (item 10), and they believed that create rubrics is more worthwhile and communicated with colleagues (item 12). They also change their view of that students should master basic operations before they tackle complex problems. Our data analysis also shows that items 1, 11, 13, 18, 19 20 had a moderate improvement, and the other items did not change very much.

At the end of the year, the teachers were asked to complete a survey.. When asked questions about the use of wikis, most teachers said that they did not often use it. They encountered some challenges or difficulties in using an interactive website. When teachers answered the question "how often do you visit and use wikispaces.com?", two people answered once a week, two answered sometimes, one person wrote "pretty often", eight people wrote "occasionally, rarely, never, not often enough, only once so far, once a month", and one teacher wrote "once a unit plan". The other teachers did not answer this question. 19 out of 24 teachers answered question: What other online mathematics materials do you use? They listed various

websites and online materials. This means that the grade eight teachers are able to use one-way websites to retrieval information.

When teachers answered the question about what they need for the future workshop, 71 percent of them said they needed upgrading on the use of a wiki and other online resources, 57 percent said they needed upgrading technology in mathematics classes, and 61 percent said they needed knowledge about how to assess students' learning.

### **Qualitative:**

Teachers indicated that they had improved their mathematics teaching due to the collaborative inquiry project. "It has allowed for more ideas/differentiation to come into the classroom ... my practice has been changed. It is easier to integrate, use a variety of resources, my kids (students) are happier, and energy is up" (T1, survey, May 16). "I have learned a lot about what I need to do (best practice) to get back to a successful math program for my students".

Teachers hold positive attitude for connecting with the same colleagues. One teacher wrote "Great way to connect with other colleagues from other schools. I especially enjoyed chatting and sharing with grade 9 teachers in the school our students more to"; while another teacher wrote "Collaboration has improved our overall student success and their perception of math success".

Teachers enjoyed this kind of workshops because they can access more resources. A teacher wrote in the final survey: "my practice has been changed. It is easier to integrate, to use a variety of recourses. My kids are happier and energy is up". School teachers in this urban school were very adoptive at technology. In this school professional learning community, teachers have opportunities to learn technology with others and share methods to use it. Some of them set blogs to communicate with students, parents and colleagues (Feb. 13, 2013, interview).

Some teachers encounter difficulties to use technology, but they try to use geometric software and visit websites to get teaching resources for teaching. However, they are not used to using two-way interactive websites such as wikis. Some teachers began to use blogs to communicate with students and parents, but most of the teachers use emails to communication. Many teachers in the survey suggested learning more technology in the further project. When we search the wiki website, none of the teachers took part in forum discussion of how to teach mathematics content in different strands.

## **Discussion and Implication**

The quantitative and qualitative results confirmed the emphases of the teachers' inquiry project. The five out of ten dimensions (McDougall, 2004): student tasks, constructing

knowledge, manipulative and technology, assessment, and teacher comfort and attitude towards mathematics; have been improved after the one year project. Although we have not observed students' performance of these participants, their feedback showed us the teachers felt that their comfort and attitude towards mathematics began to change. Teachers and principals expressed their appreciation to the content and style of training. The mathematics content addressed in the project was grade 8 curricula and connections with grade 7 and 9. Consequently, teachers understand mathematics knowledge in their teaching areas in breadth and depth. It helps teachers address students' needs of mathematics learning more flexible.

The upgrading technology helps teachers' instructional practice as well as communication. The use of computer software in teaching can help students' visualization and spatial development, and effectively use of Internet information can help teachers' collecting teaching materials and sharing ideas of teaching. Therefore, technology not only facilitates teachers' teaching and learning in formal and informal ways. The results of this project show us the advantage of use of technology, and also show us some teachers' struggle in use of technology. It reminds us when we upgrade teachers' subject matter knowledge, technology also one of the important content should be addressed.

Teachers' collaboration between educational institutions, peer teachers and schools, and educational researchers are important for their professional development and practical work. In this project, educational researchers knew what teachers may encounter in their teaching and learning and their investigation focused on the issues. This kind of content arrangement and program design are more closed to teachers' practical work. Teachers shared ideas during the workshop day and online sharing teaching materials reduced teachers' feeling of isolation. Peer teachers' ideas and experience provide positive impact on teachers' attitude towards mathematics teaching and learning.

In conclusion, the results provide evidence that professional development programs for elementary school mathematics teachers should contain workshops that include mathematics content that is appropriate for the teachers. The model of integrating technology, mathematics content, and pedagogical knowledge is an effective and efficient way of teacher professional development. The training that combines face to face and wiki interactive websites provides and creates opportunities for the same grade teachers' communication, sharing their ideas and resources. Use of wikis is a good way for sharing ideas and teaching resources. However, inservice teachers are not used to two-way interactive websites to communicate with peers. At present, most of them use one-way static websites and retrieve teaching materials. The results also showed that teachers' collaboration helps them improve their pedagogical content knowledge.

At present, in the Ontario province educational context, teachers have to find teaching resources in their limited time outside classrooms daily. The integration of technology and appropriate content training may be the best way to improve teachers' professional knowledge. However, teachers should upgrade their technology knowledge of use social media websites so that they can communicate on-line.

This study provides a useful model to improve inservice mathematics teachers' professional programs. It also indicates teachers' training should focus on their practical teaching, which is the most effective way to professional development. Hence, preservice teachers' programs may focus on teachers' practical work. The results also provide researchers and policymakers to consider how to upgrading teachers' technology.

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## Appendix A

### Attitudes and Practices to Teaching Math Survey (McDougall, 2004, pp. 87-88)

Circle the extent to which you agree with each statement, according to the A to F scale below.

Then, use the charts at the top of the next page to complete the Score column for each statement.

**A** Strongly Disagree      **B** Disagree      **C** Mildly Disagree  
**D** Mildly Agree      **E** Agree      **F** Strongly Agree

1. I like to assign math problems that can be solved in different ways.
2. I regularly have all my students work through real-life math problems that are of interest to them.
3. When students solve the same problem using different strategies, I have them share their solutions with their peers.
4. I often integrate multiple strands of mathematics within a single unit.
5. I often learn from my students during math because they come up with ingenious ways of solving problems that I have never thought of.
6. It's often not very productive for students to work together during math.
7. Every student should feel that mathematics is something he or she can do.
8. I plan for and integrate a variety of assessment strategies into most math activities and tasks.
9. I try to communicate with my students' parents about student achievement on a regular basis as well as about the math program.
10. I encourage students to use manipulatives to communicate their mathematical ideas to me and to other students.
11. When students are working on problems, I put more emphasis on getting the correct answer rather than on the process followed.
12. Creating rubrics is a worthwhile exercise, particularly when I work with my colleagues.
13. It is just as important for students to learn probability as it is to learn multiplication.
14. I don't necessarily answer students' math questions, but rather ask good questions to get them thinking and let them puzzle things out for themselves.
15. I don't assign many open-ended tasks or explorations because I feel unprepared for unpredictable results and new concepts that might arise.
16. I like my students to master basic operations before they tackle complex problems.
17. I teach students how to communicate their math ideas.
18. Using technology distracts students from learning basic skills.
19. When communicating with parents and students about student performance, I tend to focus on student weaknesses instead of strengths.
20. I often remind my students that a lot of math is not fun or interesting but it's important to learn it anyway.

Statement	Extent of agreement	Score
<b>1</b>	A B C D E F	
<b>2</b>	A B C D E F	
<b>3</b>	A B C D E F	
<b>4</b>	A B C D E F	
<b>5</b>	A B C D E F	
<b>6</b>	A B C D E F	
<b>7</b>	A B C D E F	
<b>8</b>	A B C D E F	
<b>9</b>	A B C D E F	
<b>10</b>	A B C D E F	
<b>11</b>	A B C D E F	
<b>12</b>	A B C D E F	
<b>13</b>	A B C D E F	
<b>14</b>	A B C D E F	
<b>15</b>	A B C D E F	
<b>16</b>	A B C D E F	
<b>17</b>	A B C D E F	
<b>18</b>	A B C D E F	
<b>19</b>	A B C D E F	
<b>20</b>	A B C D E F	

## Appendix B

**Table1.** Teachers' attitudes and teaching methods changes from beginning September 2012 to May 2013.

	2012		2013		Mean Dif	t	p-value	Mean Change%
	Mean	SD	Mean	SD				
Item1	4.722222	1.017815	5.055556	1.21133	0.3333333	0.922	0.369	5.555556
Item2	4.333333	1.028992	4.777778	0.646762	0.4444444	2.046	0.057*	7.407407
Item3	5.388889	0.607685	5.5	0.785905	0.1111111	0.566	0.579	1.851852
Item4	4.277778	1.274434	4.222222	1.060275	-0.055556	-0.236	0.816	-0.92593
Item5	4.555556	0.921777	4.722222	1.363626	0.1666667	0.47	0.644	2.777778
Item6	5.277778	1.074055	5.388889	1.460817	0.1111111	0.247	0.808	1.851852
Item7	5.888889	0.323381	5.944444	0.235702	0.0555556	1	0.331	0.925926
Item8	4.111111	1.07861	4.833333	0.857493	0.7222222	2.6	0.019**	12.03704
Item9	3.722222	1.526455	4.333333	1.188177	0.6111111	2.17	0.045**	10.18519
Item10	4.666667	0.907485	5.111111	0.6764	0.4444444	2.046	0.057*	7.407407
Item11	4.5	1.581139	4.833333	1.248529	0.3333333	0.697	0.495	5.555556
Item12	4.5	0.985184	5.055556	0.937595	0.5555556	1.966	0.066*	9.259259
Item13	5.333333	0.766965	5.055556	0.872604	-0.277778	-1.567	0.135	-4.62963
Item14	4.777778	1.003263	4.722222	0.894792	-0.055556	0.251	0.805	-0.92593
Item15	4.833333	1.098127	4.833333	1.20049	0	0	1	0
Item16	4	1.455214	2.888889	1.07861	-1.111111	-3.448	0.003**	-18.5185
Item17	4.888889	0.6764	4.944444	0.998365	0.0555556	0.251	0.805	0.925926
Item18	4.833333	1.339447	5.222222	1.308594	0.3888889	0.876	0.393	6.481481
Item19	4.555556	1.199128	4.777778	1.395605	0.2222222	0.592	0.562	3.703704
Item20	4.944444	1.349171	4.666667	1.57181	-0.277778	-0.736	0.472	-4.62963

Note: \* --- p-value < 0.1, these items have significant changes in 90% confidence.

\*\*---p-value < 0.05, these items have significant changes in 95% confidence.

Title of Submission            One Song, a World of Education

Topic Area                    Teacher education

Presentation format        Paper (would like a 30 minute slot minimum but would prefer 40 minutes if this can be achieved without hindering anyone else's presentation)

#### Description

This presentation illustrates how one song opened doors to a world of real education more than years of formal secondary and post-secondary schooling. The presentation also demonstrates how this effective pedagogy enlivens and awakens the curiosity to learn, leading to a more rewarding learning experience. This is something that most schools still struggle with.

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#### Abstract

The use of popular music and song as an effective pedagogical tool has largely been ignored by most teachers, education policy makers and education administrators. The fact that most young people would rather listen to their music than their teacher also goes largely unnoticed in schools. Could it be that 'lyrics and music provide students with access to deep emotional content' (Kelly, 2012) or that sound actually 'penetrates us' and engages us on a 'bodily level' (Bresler, 2005) yet most educators fail to see this connection to learning. This study demonstrates how engaging with just one song opened doors to a world of education that was not available in the traditional classroom settings.

Parallels are drawn with John Holt's examples from a One Room School for 'real' education and the author uses own personal experience (Van Manen, 1990) to show how one song can be incredibly effective as a teaching and learning tool. Phenomenological human science provided an account of how listening to and engaging with one particular popular song from 1984 developed an insatiable appetite for learning and how that study continues and ventures into areas not previously envisioned.

The study also aims to show how educators can use this pedagogy of song in many learning approaches such as Transformative learning, Life Long Learning, Case Study, Blended Learning.

# **A Report on Learning about Learning Together**

By: Maria C. Guilott, Ph.D. and Leslie Collings, MED

## **Contributors:**

Kim Brandon  
Sharon Rhodes  
Denise Cerrato  
Heather Fansher  
Tracy Lyons

## **Synergy to Begin the Process**

For an idea to crystallize, there has to be an expressed need and committed people to see it through. Following the writing, publication and distribution of [A Value Added Decision](#), a little book on the power of learning walks, participating principals and the author continued to maintain a virtual relationship using Skype as the vehicle for frequent coaching conversations. These conversations, however, were just between two people. There was a need to expand the dialogue so Maria Guilott in Louisiana, USA and Leslie Collings in Calgary, Canada decided to create a venue for principals to chat. After much preparation and deliberation, on April 17, 2012, **Principal by Design Leadership Center** was born. With the advent of free distance communication through tools such as Skype, coaching over thousands of miles is no longer a dream. In fact, the reality is that distance communication is free on the Internet. To be able to include many speakers at once that could speak and see each other simultaneously on real time, the group used Google Hangout as the medium of communication. The tool lends itself to screen share and document share, both desirable options. The time difference for participants in the Americas was not more than 3 hours, thus making the communication possible during the school day. Participating schools were Springbank High School in Canada (three administrators), Chestermere High School in Canada (one administrator), George McDougall High School in Canada (one administrator), Northeast Middle School, USA (one administrator), Maria Guilott, consultant and retired educator, USA, Hixson Middle School, USA (one administrator) Escuela Internacional Sampedrana

in Honduras (2 administrators), and Santiago College in Chile (2 administrators). Attendance to monthly meetings of the Principal by Design Center was completely voluntary for this first group of fellows. Nevertheless, regardless of the time of the year, attendance remained at 85% for each session. Even during the month of December the group insisted on meeting despite a very full local agenda.

### **Process Followed**

Kim Brandon, principal at Northeast had participated in the writing of A Value Added Decision. She recruited a fellow principal. Leslie Collings recruited fellow administrators in Canada and Maria Guilott reached out to contacts to get participants in Honduras and Chile. Google Hangout limits participation to 10 computers so that made the limit of the number of fellows an easy one. Sponsoring this effort was Dr. Grant Wiggins, author of Schooling by Design, who also participated in the first conversation and recognized the need for principals to share concerns and work through problems together.

The idea to generate meaningful conversations up and down the Americas took the form of monthly hour-long meetings with a formal agenda driven by a burning question. To chronicle the work in the monthly conversations, Leslie Collings created a website using weebly as the tool. The link to the website is <http://principalbydesign.weebly.com/>, however, it is password protected. The website quickly became the repository of ideas, videos, shared possibilities, and links to other virtual tools. For example, one of those virtual tools each week became a newspaper published by Leslie Collings entitled Principal by Design using Paper.li as the software. All participants were privy to the weekly newspaper. Additionally, using Twitter as a social media to broadcast articles, videos, blogs, etc., there is a hastag: *#princonv* that captures the work for the group. In other words, the group has taken full advantage of the myriad of technology tools available to connect to the world, to expand their repertoire, to seek to understand, and to broaden their horizons.

## **Testimony from the Principal Center Fellows**

After one year of involvement in this virtual connection, principal participants have this to say.

### **Principal A**

The Virtual Principals' Center keeps me connected to other educators who are wrestling with similar issues. This year, for example, we have covered topics that have ranged from one-to-one computing, personalized learning, Learning Walks, dealing with challenging parents, communicating effectively with our stakeholders, and responding to difficult discipline situations—with students as well as staff.

Although I am in a large district that provides development to its administrators, the development is on a more “global” level and often misses the specific needs that I have. What we have been able to do through our Virtual Principals' Center is identify a focus for each of our meetings that is based on something one (or more) of us is dealing with at the time. If there isn't anything pressing, we have been challenged to think about something new (e.g., personalized learning).

### **Principal B**

Involvement in our virtual principal's centre has given me the opportunity to field questions to colleagues who are in the "trenches". I can bounce situations, ideas, etc. off a group of like-minded peers in a trusting way guided by an extremely knowledgeable facilitator. Sharing of ideas from all over the world puts the realm of education at our fingertips. When we ponder ideas, questions, and situations together and can speak about it, the synergy created is amazing. As I have said before, even when we are at our busiest, we NEED to meet with the group because of the positive energy I feel as a result of my involvement.

### **Principal C**

This experience is difficult to explain. We were a group of principals with the objective of being part of a learning community where common experiences will be shared and supported, but what we learned was not identifiable to be put in a

specific category or competence. It was an informal, organized, learning experience. As I participated, I was able to adjust my thinking and practice in dealing with school issues. Learning from others is a way to mature and move yourself from a place of comfort to a place where you are not an expert any more. I've learned that it's fine; it is not a sign of a weakness but a sign of growing.

Vygotsky suggested that knowledge is constructed in the midst of our interactions with others. In my interaction with other principals I've been able to acknowledge how similar our schools are and how our common school issues are impacted by culture, society and its values. I've been able to recognize similar struggles and how they've turned into victories or are on their way to make positive changes in my community. This is certainly encouraging for me in a new principal position. It reminds me of my responsibility and commitment to focus my efforts on student learning, their social and emotional well being, and creating a proactive community of teaching and learning.

#### Principal D

Being invited to join the virtual principal's group this year has been both an honor and an eye opener. Just knowing that there are other administrators from across the globe that struggle and question the various aspects of their role brings a sense of camaraderie. We are not alone. Reflection continues to be a huge component of each day – and listening to the reflections and the questions that arise from others reminds me that it's really okay not to know everything (thank goodness). It's okay to hang out in a state of '*uncomfortableness*' and oftentimes it is from this vantage point that learning occurs. Hearing their stories and sharing in their trials, tribulations, and successes makes me feel like I belong to something larger than the space I occupy.

#### Principal E

I have very much enjoyed the virtual principal's centre this year. These conversations influenced me in a couple of ways. We often talk about the importance of the social context in making decisions about our schools. We were able to talk about those contexts and the unique nature of each of the schools. What

one administrator was able to do in one school would not necessarily work in others. The group gave us a forum in which we could talk about those issues, get others' feedback, and essentially think through a variety of scenarios. It was the voices of many that strengthened the arguments and eventually the decisions. Although we found our differences particularly in social context, what really struck me was the commonality of our experiences. No matter where the person lived, the same underlying values resonated throughout. The educational leaders in this group focused on what was best for their students. There was a thread that held us together in being passionate and purposeful about what it is that we do. This gave me a much more global view not only on schools but also on those who choose to work in them.

### **The Use of Collegial Learning Walks**

A common yield from the yearlong experience was the use of collegial learning walks in three of the schools, Springbank Community High School, Chestemere High School, and Northeast Middle School. Actual participation in collegial learning walks was a school decision, one that participating teachers lauded in a virtual meeting on April 17, 2013 captured on video for the purpose of chronicling the event.

The actual process shared with the principals was the subject of collegial work for three years. Maria Guilott co-authored a book, "A Value Added Decision," that incorporates the work of two of the principals in the study, Leslie Collings and Kim Brandon. Initially, both were reluctant to consider the idea because they already "knew" how this by-product of management by walking around "worked." Both resisted considering that the process had value. However, they both finally agreed to try it out. Once they did, they embraced it wholeheartedly and have promoted the process within their buildings and in the case of Leslie Collings within her jurisdiction. The process has grown in appeal through repeated use and application.

## Collegial Learning Walks as a learning process

The process is designed to examine and analyze learning in the moment as it happens with students. As a professional development strategy, Collegial Learning Walks are designed for teachers in all disciplines and grade levels who teach students from all socio-economic and ability groups. By looking at learning first, we can begin to see together, as we mediate each other's thinking, which strategies are truly engaging students in their work, what makes the work we design engaging to students, and how the work is making it possible for students to transfer what they learn to a new and different context.

What it is	What it is not
<ul style="list-style-type: none"> <li>• It is a process designed to look for what's next in our learning about learning.</li> <li>• It is a collaborative, generative professional development process designed to support everyone's thinking about instructional practice.</li> <li>• It is designed to raise questions and promote self-reflection.</li> <li>• It is a process that will eventually promote a way of being in an instructional community, of sharing, of coaching, of examining practice with no particular agenda in mind other than improved learning.</li> </ul>	<ul style="list-style-type: none"> <li>• It is not a process designed to find what is wrong.</li> <li>• There are no presuppositions that anyone is broken or defective in their practice.</li> <li>• It is not putting anyone on notice of improvement.</li> <li>• It is not designed for the implementation of any particular improvement strategy.</li> <li>• It is not designed to put anyone's practice under scrutiny, critique, or improvement.</li> <li>• It is not a static group or network.</li> <li>• It is not designed to have a focus on a common "problem or practice."</li> </ul>

### Absolutes in a collegial learning walk:

1. With teacher permission, a group of 3 to 5 members walks in the classroom avoiding time when the teacher is in direct instruction. The short classroom visit is designed so that the participants on the walk can ask students specific questions getting at what the student is learning, how he will know when he has learned it, and what he will do with what he has learned.

2. Everyone talks to different students.
3. No one writes anything down.
4. Immediately following the 5-6 minute classroom visit, the group debriefs the experience adhering to a strict protocol.
5. No judgment enters the picture
6. The experience is designed to cause reflection in the 3-5 participants about their own teaching experience and grow the group's knowledge about learning.

### **What's the immediate and long-term payoff for learning walks?**

The power of the process resides in the mediated conversation that immediately follows the 5-6 minute classroom visit.

Teachers from Canada and the United States met electronically in a focus group setting using Google Hangout as the vehicle to discuss their experience with collegial learning walks. The meeting was taped and results of the session were captured to reflect the following observations.

### **Teacher responses to the process**

#### **What's next for me?**

Teachers noted that they wanted to encourage their peers to participate in the process and were now more open to welcoming their peers into their classrooms.

#### **Kick it up a notch**

Teachers pointed out that after participating in the Collegial Learning Walks, they had become accustomed to reflecting and always asking themselves how they could have "kicked it up a notch?" They found the process to be a powerful collaborative tool.

### **Cross-curricular opportunities**

Teachers observed that by participating in the walks and visiting cross-curricular classrooms, their practice did not stagnate and become stale. There was something to be learned from other disciplines.

### **Level of professionalism**

Participants feel that the Collegial Learning Walks bring a level of professionalism that you do not see otherwise.

### **Never Evaluative**

One teacher was adamant that the fact that Collegial Learning Walks were non-evaluative made them powerful because he was able to be relaxed without the fear of judgment when his peers walked in his classroom.

### **Rules of Engagement**

A teacher emphasized how critical it was to show constant fidelity to the rules of engagement. He felt everyone needs to know what the rules are and how to adhere to them.

**From "Drive by" to Learning walk**, an open and honest conversation among peers about learning

Finally, the group distinguished the clear difference between Collegial Learning Walks and the standard walk through or "drive by" as teachers refer to them. They felt without equivocation that the discussion immediately following the learning walks is what made the difference and the moment of learning about learning for everyone, from everyone in the group.

### **Practicing principals echo the teachers and add the following:**

1. The Learning Walks Process is a powerful professional tool. I have been lucky enough to participate in a variety of capacities now and have done so since we began implementing the Learning Walks at SCHS. For the teacher, the feedback provides excellent data to continue to improve your teaching practice. As an administrator it has been an excellent professional learning tool. The more I am exposed to others' classrooms, the more I can reflect on and change my own practice. It also gives me a framework in which I can engage students and teachers in the teaching and learning in the school. The more you can engage teachers in the process, the better the instructional design of the entire school will be.
2. Learning walks have become a platform for fantastic discussions and an opportunity to really think about best practice and what that looks like. It encourages an open-door environment where students and teachers become familiar with a constant movement in and out of the classroom. Students are provided an opportunity to share their understanding and to become active participants in dialogue with other adult people in the school. This increases their sense of belonging and leadership. Students feel heard.  
Not only are learning walks involving students in an authentic interaction, but they also provide a strong opportunity for professional learning on the part of the teachers and administrators engaged in the walk. By seeing and listening to what is happening in other classrooms, teachers begin to see beyond their own experience – another lens is created. This leads to reflection and questioning of practice, thus an environment of constant improvement becomes the norm. Sometimes 'we don't know what we don't know' and learning walks allow us to discover and therefore take action. Learning walks are all about building collegiality, building trust, and opening our doors to the possibilities of 'what's next?'

The 'what's next' at Springbank High is that our entire division has discovered the inherent value of learning walks and beginning in the fall, all schools in Rocky View School District have been invited to learn about and begin this practice in their own schools. Teachers of Springbank High will take a leadership role in this initiative.

3. Learning walks have opened up an entirely different way for staff to open their doors, share best practices, converse about education, reflect upon their own practice and for staff to join together with colleagues for a very positive experience in their own building. The payoff is that staff becomes more reflective of their own practice and concerned about the impact of their teaching on our kids. An added benefit is that students get to "sell" what they are doing to other teachers - our kids were excited to talk about what they were doing in class and it became a very positive experience for the students as well. They also got to share with professionals in the building that they may never have otherwise and the positive ownership they took was incredible.

The added bonus of Learning Walks is that everyone in the building can be involved and the time period for a walk is relatively short compared to other professional learning. Again, the benefit is that, for some teachers, it is life changing - they actually get to see education through our students' eyes. The experience is really quite amazing!

4. One thing that makes the Learning Walk so different from the typical "walk-through" is the way in which all involved in the Learning Walk are constantly learning. Even though there is a facilitator for the Learning Walk teams, these facilitators are not "experts." Their role is to keep the debriefing focused on the reflective questions and to maintain the learning experience as opposed to an evaluative process

Something else that makes the Learning Walk so different is the focus on the student and his/her engagement to the task rather than to the teacher (e.g., Eyes on the players—NOT the coach!).

We “bother” with Learning Walks because they challenge us to get out of our comfort zone—our own classrooms—and experience learning through our students’ eyes. The payoff is the increased level of collaboration. Teachers want to learn more from their peers as a result of observing students engaged in learning experiences in their peers’ classrooms. The payoff should also result in higher levels of engagement for all students and more meaningful learning experiences that—ultimately—should result in high achievement for all our learners!

### **Lesson Learned**

1. Although there was initial concern that virtual conversations with strange people would inhibit open and honest dialogue, apprehensions were ill conceived. The first session was a get to know you session that was a little stiff. One way used to break the ice was asking each participant to share a quote that resonated with each person and why that was so. By having tools and documents immediately at everyone’s disposal through the Weebly, everyone realized that this was their moment to share and learn.
2. Being a part of this group of principals is a privilege that comes with commitment on the part of each participant, a commitment to be present and come out from behind the desk to have real conversations. After the first meeting, each subsequent meeting was preceded by an email reminder that included the main topic or question for discussion to give participants an opportunity to think ahead. Ultimately, the group became comfortable with each other and was able to discuss burning issues each person had at his/her school.
3. Based on the group’s needs, members, including the facilitator, are able to offer resources, on-line professional development and deliver it

- virtually using Skype or Google Hangout.
4. It is important to note that participants need to be invited to participate and asked to commit their time to the monthly conversations. Since no one needs to travel to go anywhere, the group can simply meet from individual offices and dedicate the time to the conversations.

In conclusion, the entire virtual principal center experience has enriched the professional toolkit for all participants. Plans are to expand and continue the process next school year.

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# Silent Custodians

A comparative study of public statues in the United States and Australia which reflect on relationships between Indigenous and Colonizing Peoples.

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# Pubic Statues

- Statues are found throughout the world commemorating the achievements, legacies and events of a human past.
- In this paper the nature of public statues portraying Indigenous Peoples in the United States and Australia will be explored as a tool of education.

# Colebrook Reconciliation Park

- Colebrook is located near Port Augusta in South Australia and was site to an Aboriginal mission.
- During a period from 1900 to 1970 it has been estimated that at least 50, 000 Aboriginal children were removed from their natural parents under various government legislations.
- These Children became known as the Stolen Generation.



- Some statues portray the injustices of past relations. To remember the Aboriginal children of the Stolen Generation, the 'Fountain of Tears' and the 'Grieving Mother' statues, sculpted by Silvio Apponi, have been created.



- **A concrete statue honours a blind Native American woman named Amanda who was removed from her farm on the headwaters of the Coos River, and marched north to Yachats.**



- A 3m high memorial consisting of a granite pedestal, with four panels of bas reliefs on each side and a bronze bust of Maitland Brown perched right on top.



- The panels in question depict Police Inspector J.K. Panter, Police Constable W.H. Goldwyer and James R. Harding who were killed allegedly killed by Aboriginal People in 1894).



- One panel shows a group of Aborigines being lead in single file with shackles around their necks



- In 1990 someone got themselves a chisel and chinked off Brown's head as a protest against the glorification of a man who had a reputation for mistreating Aborigines. A replacement bust was put in place until the head was secretly returned in 1993.

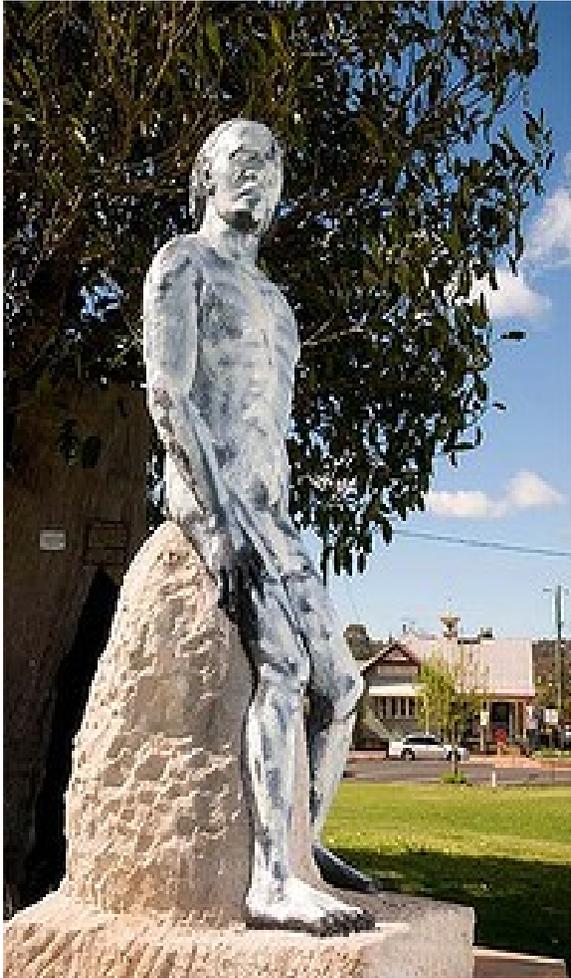




An Aboriginal statue in the centre of Albany's main street has been vandalised by being painted white.

The statue is of Aboriginal man, Mokare, who is celebrated as a peace maker between Indigenous and European people during the settlement of Albany in the 1800s.

- Opposite shows a cleaner repairing statue vandalised with white paint.



- Three teenagers have been charged over the desecration of a statue of a local aboriginal identity at Crows Nest in Queensland's Darling Downs.
- Police say the trio spray painted the statue white, broke a street light, started a fire in the middle of a road and broke into several vehicles.
- The two metre-high statue is of the town's namesake Jimmy Crow, a local Aboriginal legend who helped early white settlers and drovers travelling through the area.



- This sculpture by Craig Dan Goseyun, titled "Follows the Mountain," was spattered with paintballs recently. The vandalism on the Indian head was reported Tuesday morning. It is located in a roundabout on Richards Avenue near Santa Fe Community College and the Santa Maria de la Paz Catholic Community



- I'm glad they caught the knuckleheads responsible for knocking over the Big Indian statue on the New York State Thruway near the Cattaraugus Reservation. Six punks from Clarence High School were arrested for the crime today. These kids are so dumb, they probably didn't even realize how offensive this thoughtless act of vandalism was. I'd feel the same way if it were a statue of Martin Luther King or an Irish statue in South Buffalo.





- A sculptured statue of John Eyre and his Aboriginal guide Wylie – in recognition of their magnificent work in travelling across what is now known as the Nullarbor Plain nearly 200 years ago!



- Sacagewea, a Shoshone woman has become an important part of the Lewis and Clark legend in the American public imagination. The National American Woman Suffrage Association during the early 20<sup>th</sup> century adopted her as a symbol of women's worth and independence, erecting several statues and plaques in her memory, and doing much to spread the story of her accomplishments



- **Sotheby's withdraws sculptures of Woureddy & Truganini busts following protests from Aboriginal people claiming they depict a demeaning image of Aboriginal peoples.**



- The Rosenthal AP photo. (Photograph of Flag Raising on Iwo Jima, 02/23/1945 (NWDNS-80-G-413988; ARC Identifier: 520748); General Photographic File of the Department of Navy, 1943 - 1958; General Records of the Department of the Navy, 1804 - 1958; Record Group 80; National Archives.)



- “But the cigar-store Indian was everywhere similar, of no tribe and no place, wearing splendid jewelery, tunic, feathers, sometimes fringed leggings, the Noble Savage of early-19th-century romantic imagining -- and an object lesson in the relationship between popular art and stereotype.” (Phyllis Rose: 2014)



- King Kamehameha was out the front of this thrifty store until an Hawaiiin person complained to the owner that it was demeaning. The owner thought about it and sold the statue and since that time his business has prospered.

# BEYOND TOURIST CAMERAS

- It can be seen that statues have an important place in learning about past and present relations between Indigenous and non Indigenous peoples. Comparative studies of commemorative public statue figures depicting Indigenous history are useful visual tools for education in looking at past relationships between Indigenous and Colonial populations in countries such as Australia and the United States. Statues hold a key to the past as timeless symbols which transcend into the living world. Vandalism marred by racially derogative graffiti reflects an underbelly in contemporary society. On a positive note statues erected of Indigenous/Colonial contact endeavour to acknowledge and teach.

# The Use of Indigenous Sculptures in Education

- A variety of themes can be taught through the use of Indigenous sculptured works to illustrate both past and present events and issues.
- Statues have an ongoing value as symbols of the past which impart useful information about the relationships between Indigenous and Colonizing Peoples.
- The public statues in both the United States and Australia of about the relationship between Indigenous and Colonizing Peoples reflect distinct similarities.

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